AIR CONDITIONING

Millions Heard the President Say—

While I am away from Washington this summer, a long needed renovation of and addition to our White House office building is to be started. The architects have planned a few new rooms built into the present all too small one-story structure. We are going to include in this addition and in this renovation modern electric wiring and modern plumbing and **modern means of keeping the offices cool in the hot Washington summers.**—From the radio address by President Franklin D. Roosevelt at Washington, D. C., Thursday evening, June 28, 1934.

Westinghouse Unit Conditioners Used In New York Bank

NEW YORK CITY—The Grand Central branch of the Emigrant Industrial Savings Bank originally installed two unit air conditioners to correct "a pocket of dead air" in one corner of the office, but the additional comfort was soon so apparent that six more units were added to air condition the main banking room.

Because of the 120,000 B.t.u. per hour cooling capacity, the bank's summer business can be conducted by employes who are cool and efficient, and customers whose dispositions are unruffled by summer's heat.

On the advice of engineers of the Metropolitan Air Conditioning Corp., Westinghouse air-conditioning dealer in Manhattan, the officials of the bank chose the unit type of air conditioners rather than the central plant type.

The unit type permitted the officials to make this original installation then and, at future time, to air condition other sections of the banking quarters, each successive of the others.

The equipment consisted of 10 1-ton Westinghouse air conditioners and the necessary refrigerating apparatus—one 6-ton and two 2-ton Westinghouse condensing units.

The air conditioners are enclosed in a low metal cabinet, finished in a mahogany design. Air is drawn into the cabinet, is cleaned by filter, is cooled and dehumidified in passing over chilled coils, and then is recirculated into the room.

Two of the air conditioners were placed in the office corner characterized by the "pocket of dead air." In the main banking room, six were distributed in the tellers' quarters back of the banking counter and two in an open office at the end of the counter.

The three condensing units were placed out of the way in the basement. The air conditioners are connected to their respective condensing units on the floor below by a system of ¼-in. copper tubing through which the refrigerant circulates.

Attic Air Circulator Introduced by G-E

SCHENECTADY—An air circulator, for use in inducing comfortable conditions in the home during hot summer weather, has been announced by the air-conditioning department of the General Electric Co., with offices in New York City.

The air circulator is designed primarily for installation in the attics of homes where it accomplishes its purpose in two ways: first, by circulating air through the attic during the daytime, it practically eliminates heat leakage into the living quarters from hot sun effect on the roof; second, by drawing the relatively cool outside air through the living quarters toward the end of the day and during the evening, it quickly gives the home the benefit of the cooler outside temperature.

The G-E type HV-1 air circulator consists of a rubber-cushion mounted motor directly driving an 18-in., three-blade, aphonic-pressure-type propeller fan, quiet in operation and assembled in a sturdy metal cabinet attractively finished in gray and nickel.

The fan operates at 860 r.p.m. and delivers 2,050 to 2,600 cu. ft. of air per minute, depending upon the amount of back pressure. The device may be set in front of an attic window and suitably connected to the nearest electric outlet, or it may be permanently installed with a duct connection to the outside and with permanent electric wiring, a time switch, and other accessories.

The air circulator is available with either an a.c. or a d.c. motor, as required. An automatic time switch, available as an accessory, is of the mechanical type and can be set for any period up to 10 hours. A manual wall switch and a metal duct attachment can also be obtained, the latter being provided with louvres.

It is readily apparent that the air circulator, in addition to its usefulness in promoting summer comfort, can effectively remove tobacco odors and stale air from living quarters.

Its use, moreover, is not restricted to the primary purpose for which it was designed, many applications being found for it in small diners, kitchens of average-size restaurants, and small dance halls.

Carrier System Cools Baltimore Theater

BALTIMORE—A 15-ton Carrier system to cool, dehumidify, clean, and circulate the air has just been installed in the Howard theater here by Air Conditioning, Inc., Carrier distributor in this city.

Of the unit type, the system comprises four 3-hp. Carrier compressors, using Freon, installed on the building's third floor. By direct expansion these units cool four-circuit Aerofin coils located within the cooling units at the rear of the theater.

All necessary duct work was installed by the William E. Cotton firm here. The system is designed to keep the indoor temperature at 80° F., the relative humidity at 50 per cent. Company which made the installation states that the amount of fresh air to be supplied to the theater will be about 7 c.f.m. per person. The cinema house has a seating capacity of 250, and is said to be one of the smallest in the country to be air conditioned.

Top Floor of Washington Hotel Cooled by Carrier

WASHINGTON, D. C. — National Electrical Supply Co., distributor for Carrier air-conditioning equipment, is installing equipment for the Carlton hotel here, which is air conditioning its entire eighth (top) floor.

Air is distributed in this installation from a central, sound-proofed chamber through false ceilings in the corridors, with an outlet to each bedroom through a vent in the top of the wall over the door.

A control bracket, similar to a radio control, is being set up in each room, so that the room resident has only to turn the knob to make the room either warmer or colder.

McCORD
REFRIGERATION
PRODUCTS

COMMERCIAL EVAPORATORS

DOMESTIC EVAPORATORS

CONDENSERS

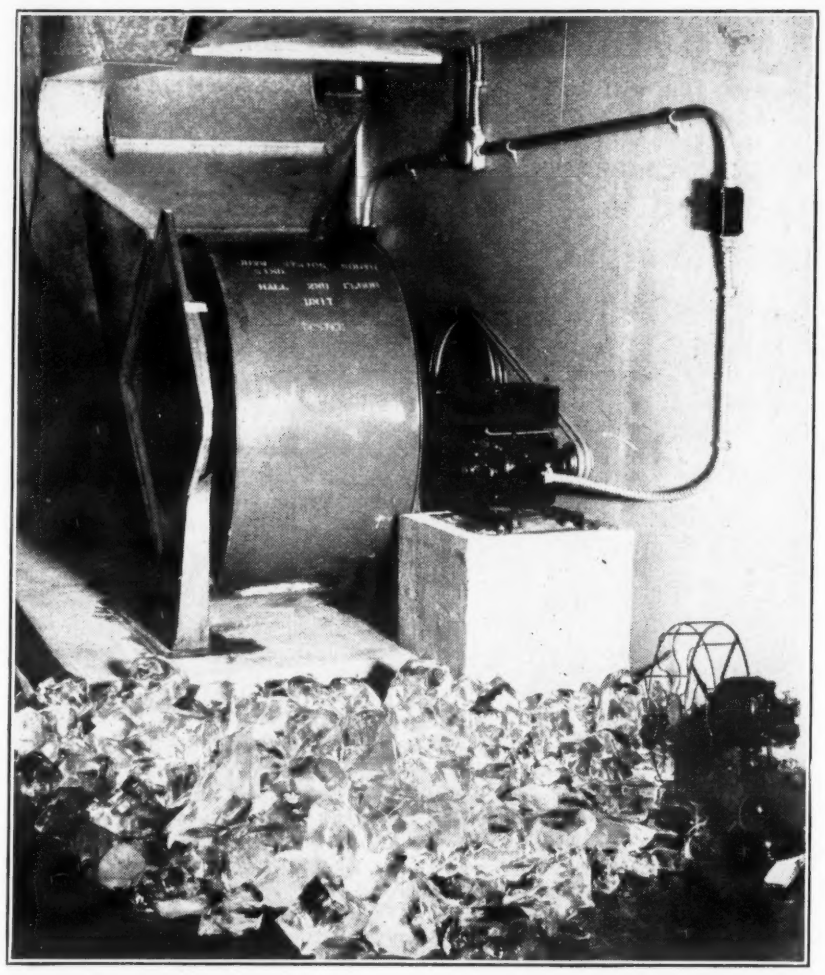
METLFLEX ICE TRAYS

SPIRAL FINNED TUBING

SPIRAL COPPER FINNED IRON, STEEL OR COPPER PIPE

McCORD RADIATOR & MFG. CO.
DETROIT. -:- MICH.

Emergency Cooling System Serves Offices of the News When Detroit Becomes Hotspot of the Nation



When the thermometer hit 103.7° in Detroit and caught ELECTRIC REFRIGERATION NEWS with its air-conditioning system unfinished, we regretted the time spent in long conferences with numerous sales engineers and wished we had bought the first equipment offered. Then we had a bright idea, and ordered 1,000 lbs. of ice. The ice was broken up on the floor (which has a drain) in the line of travel of the air going to the 24-in. American Blower fan (3,800 cu. ft. per minute) shown in the picture. An electric fan accelerated the meltage. In the afternoon 500 lbs. more of ice was delivered, and the NEWS staff worked in fair comfort. Visitors who came in from the hot street thought the place was grand. Engineering Editor Schaefer estimated the cooling effect of the ice was about equal to a 2-ton compressor. From that we figured that a 5-ton unit would do a swell job. We are learning fast about this air-conditioning business.

The 24-in. fan in the picture serves the first and second floors and basement while a 12-in. fan of the same type (not shown) serves the third floor apartment of building manager.

The square frame attached to the fan is a home-made filter doing temporary duty.

Detroit Is Hottest Place in Country

Mercury Just Fraction Beneath All-Time Peak for City

Forecasters Expect a Little Relief Today

6 a. m.	63	5 p. m.	103
7 a. m.	70	6 p. m.	101
8 a. m.	74	7 p. m.	99
9 a. m.	80	8 p. m.	96
10 a. m.	87	9 p. m.	91
11 a. m.	92	*10 p. m.	90
Noon	96	*11 p. m.	87
1 p. m.	100	*Midnight	85
2 p. m.	102	*1 a. m.	83
3 p. m.	103	*2 a. m.	79
3:05 p. m.	103.7		
4 p. m.	103		

*Unofficial.

The weather will be cooler Friday.

Sweltering experts made that prediction Thursday night after a blistering sun had sent the official mercury in Detroit to within three-tenths of a degree of the all-time summer record and caused the deaths of three Detroiters.

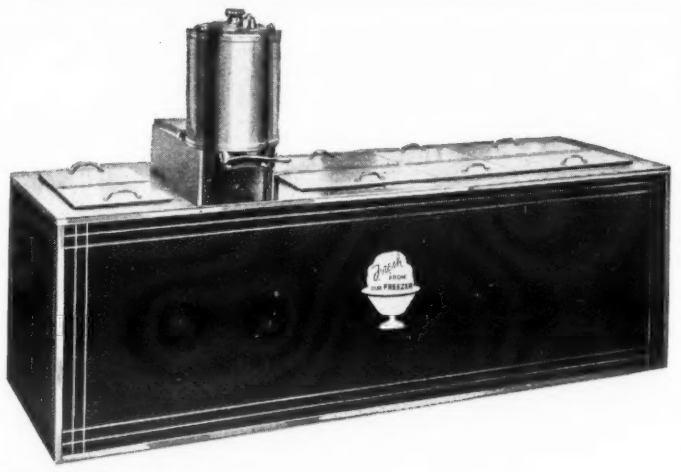
Temperatures Friday may reach into the 90's, the forecasters said, but will not come near the high point of 103.7 recorded at 3:05 p. m. Thursday. That peak was very near the high point of 104 degrees recorded here Aug. 6, 1918. It surpassed the previous record for a June day—100—set last year.

Unsettled weather Saturday may bring the heat wave to an end, it was said.

Official reports showed that Detroit was the hottest city in the country, with Kansas City and St. Louis next, with 102 degrees each, and Chicago, Cleveland and Cincinnati experiencing 100 degrees.

It was reported unofficially, however, that Mattoon, Ill., saw its all-time heat record equaled at 112, and Ottawa, Ill., and Cedar Rapids, Ia., each recorded 105 degrees. Street thermometer readings in Detroit were as high as 115 degrees.

A Vital Message to REFRIGERATION DEALERS



From the standpoint of the refrigeration machine dealer, Taylor Freezer has opened a tremendous new field for highly profitable sales. It creates the demand for MORE REFRIGERATION EQUIPMENT.

The dealer gets TWO PROFITS—one on the Taylor Freezer; another on the ice machine.

Count the number of drug stores, hospitals, hotels, institutions, schools, department stores, restaurants, confectionery stores, etc., in your territory and you can estimate the number of PROSPECTIVE BUYERS for Taylor Freezers.

You should be selling Taylor—the QUALITY COUNTER FREEZER now. Write or wire us.

READ WHAT THIS DRUGGIST SAYS ABOUT HIS TAYLOR FREEZER

Kingston, Pa.
June 26, 1934.

Taylor Freezer Co.,
Gentlemen:

We are now in the middle of our seventh season since purchasing a Taylor Freezer, which by the way you will remember was the first in the state of Pennsylvania. It has run constantly summer and winter, with but a very little attention and at practically no maintenance charge whatever.

Regarding the profits, am very much in doubt if we ever made any money when we bought commercial ice cream, but know that our profits now are real profits, our cream one of the finest, and regarding competition we have NONE, because no one is selling SPENCER'S HOME MADE ICE CREAM but us.

Yours truly,
L. R. Spencer,
Spencer's Pharmacy.

TF QUALITY WINS YOU!

TAYLOR FREEZER CORP.

"WORLD'S FINEST ICE CREAM EQUIPMENT"

BELOIT, WISCONSIN

THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

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KELVINATOR SHIPS 195,811 UNITS IN 9 MONTHS

'Forced' Market Bolsters Sales of Comfort Coolers

Smaller Stores, Offices & Homes Big Market During June

By Elston D. Herron

NEW YORK CITY—With interest in air conditioning by large commercial establishments beginning to lag around June 1, smaller stores, offices and homes stepped definitely into the picture about that time and during the month of June constituted a large part of the market for air-conditioning equipment.

This was the experience, nationally, of the General Electric Co. air-conditioning division, according to R. S. Thurston, who from headquarters here directs merchandising of G-E air-conditioning systems and units.

Big stores, hotels, and offices which contemplated buying systems this season began making their inquiries in the winter, and many of G-E's major sales in April and May were made to companies of this type.

Then, with the arrival of hot weather, came opening of the "force" market—small cafes and stores which are being literally forced to buy air conditioning to keep their summer patronage from going to nearby competitors who have already put in conditioning systems.

Cities in which General Electric has done the best business in air conditioning this season are Chicago, Omaha, Tulsa, Oklahoma City, St. Louis, Dallas, Washington, D. C., and New York City.

In numbers sold, cooling systems are still leading year-'round conditioners, he said, but proportion of sales of the latter is increasing.

Several reports have come to Mr. Thurston from companies which bought air conditioning this spring, as to what it has done toward holding or increasing summer patronage.

A 100 per cent increase in business as compared with that of former summers is reported by the Sansom Restaurant in Philadelphia, which has a 15-hp. compressor operating with four store coolers.

Patronage of the dining room in the Hayes-Adams House, apartment hotel in Washington, D. C., has been doubled since installation of its 10-hp. central plant this spring. In New York City, the Buchler Restaurant with a new 10-hp. central system, claims its business is 60 per cent better than in summers of other years.

Interesting G-E installation made recently is in the Raleigh Hotel in Washington, D. C. Three rooms are cooled—the soda bar, served by a 7½-hp. compressor; the cafeteria, by a 15-hp. and 10-hp. compressor; and the dining room, by a 20-hp. unit. One large blower delivers air to all three rooms, but the ducts are split above the blower, and separate evaporators installed in each room's duct system.

One of the company's largest installations of '34 is in Goodwin's department store in Brooklyn, where a central system with four 20-hp. compressors is used, according to Mr. Thurston.

Home owners are showing more interest in air conditioning than ever before, he said. The company has made a number of unit-type installations in residences this season, and central systems have been installed in three homes.

One of the latter is in New York City, one in Chicago. The third is in Fountain Inn, N. C., and is owned by Robert Quillen, newspaper humorist. Mr. Quillen purchased equipment to do a year-'round job. Two 7½-hp. compressors supply the cooling.

Leonard Ships More Units in 9 Months Than in Any Previous Year

DETROIT—More electric refrigerators were shipped by Leonard Refrigerator Co. in the nine months ended June 30 than in any full fiscal year in the company's entire history.

The 1933 fiscal year shipping mark, highest reached heretofore by the company, has already been exceeded by nearly 6,000 electric refrigerators.

U. S. Weather Chief To Help Dedicate Frigidaire Home

CHICAGO, July 10—(Special Wire to ELECTRIC REFRIGERATION NEWS)—With a nation-wide radio audience listening in over 57 stations of the "Blue" network, Charles "Boss" Kettering, vice president in charge of research for General Motors Corp., and "Chief" Gregg, head of the United States Weather Bureau and foremost authority on weather conditions in the nation, will talk about air conditioning, its present and future, at the formal dedication of the Frigidaire air-conditioned house on the grounds of A Century of Progress exposition here tomorrow.

Both Mr. Kettering and Mr. Gregg are expected to discuss the possibilities of the widespread application of air conditioning to homes, with Mr. Gregg presenting some original ideas.

Members of the Frigidaire sales promotion and publicity departments, plus several engineers from the factory at Dayton, have been encamped at the Sherman hotel here for several days making preparations for the ceremonies which will attend the event.

Bond & Share Men View Liftop Model

CLEVELAND—A two-day conference of Electric Bond & Share Co. sales officials representing all of the company's properties engaged in merchandising was held July 2 and 3 at General Electric's Nela Park, feature of the meeting being the presentation of the new G-E low-priced "liftop" refrigerator and companion range.

The first day was devoted to a presentation of G-E's "better light—better sight" program. Second day's sessions were in charge of the specialty appliance sales department, with talks given by P. B. Zimmerman, manager; A. M. Sweeney, sales manager; Walter J. Daily, sales promotion manager; A. L. Scaife, retail manager; J. R. Poteat, range division manager; C. M. Snyder, in charge of dishwasher sales; and Miss Edwina Nolan, home service director of the

(*Concluded on Page 2, Column 1*)

Trenton Develops Line of Water-Cooled Condensers

TRENTON, N. J. — The Trenton Auto Radiator Works of this city has just announced a complete line of water-cooled condensers for use in conjunction with machines of from ⅓ hp. to 3 hp. The water-cooled line is in addition to air-cooled condensers and liquid receivers already manufactured by this company for the refrigeration service trade, according to R. E. Nitzsche.

How to Satisfy the Customer

This petite barmaid is drawing beer from the new Frigidaire beer cooler installed in the Seville Tavern, Indianapolis. (Story on new coolers below).

G-E Flat-Top Unit Designed for Apt.

CLEVELAND—Newest of its flat-top model refrigerators, designed primarily for apartment house installation, has just been introduced by General Electric Co.

Of 3-cu. ft. capacity and a shelf area of 5.5 sq. ft., it stands 37½ in. high, 23⅝ in. wide, and 20 in. deep. Ice freezing capacity is 4½ lbs. or 40 cubes of ice. There are two ice trays, both of which are in direct contact with a freezing surface, assuring rapid freezing of ice and desserts.

Cabinet construction consists of a one-piece steel inner liner and steel outer panels with insulation sealed between. The insulated top of the cabinet is covered with a removable embossed steel panel finished in porcelain. A pressed steel strip, finished in black, covers the 4-in. cabinet legs and forms a base in keeping with the modernistic design of the cabinet.

Cabinet door and bottom panel are flush with the front of the cabinet. The bottom panel is removable, mak-

(*Concluded on Page 2, Column 2*)

Counter Flow Principle Employed in New Beer Coolers

DAYTON—Frigidaire's recently announced "Flowing Cold" draft-beer coolers utilize direct expansion of refrigerant, with beer and water coils operating in a counter-flow direction to that of the refrigerant (see drawing on page 9). Beer flows downward while refrigerant expands upward. Last year's Frigidaire beer cooler employed a secondary refrigerant to transfer refrigeration from the beer to the primary refrigerant.

The new beer coolers are available in four sizes, according to W. D. McElhinny, manager of the commercial division of the company. They are built with either two or three coils, and in both insulated and uninsulated square steel tanks.

One or more of the coils can be used to serve cold water, or they can all be used for beer. Mr. McElhinny claims that peak loads can be handled

(*Concluded on Page 9, Column 2*)

Shipments Are Ahead of Total For Last Year

First Three Quarters of Fiscal Year Shows Increase of 32%

DETROIT—Shipments of household electric refrigerators by Kelvinator Corp. for the first nine months of its present fiscal year which began last October 1, totalled 195,811 units, a gain of 32 per cent over shipments for the corresponding period of the previous fiscal year and well ahead of the entire previous year's total shipments, it was announced last Thursday by H. W. Burritt, vice president in charge of sales.

Factory officials are now in the process of getting underway what is said to be the largest midsummer sales campaign the company ever has held, according to Mr. Burritt.

S.P.U.C. Sells 4,160 Kelvinators in Drive

CHARLOTTE, N. C. — Southern Public Utilities Co., operator of power holdings in North and South Carolina, sold 4,160 Kelvinator household refrigerators in an eight-week sales drive just closed.

The S. P. U. Co. salesmen surpassed by 27 refrigerators the mark they set last spring.

Several demonstrations of individual sales prowess dotted the final sales tabulations. P. T. Hawkins of the Spartanburg branch, and H. V. Martin and Vance Jones of Burlington, together accounted for 813 Kelvinators. Hawkins sold 303, Martin 277, and Jones 233 units. The latter two were the Burlington branch's only regular salesmen, yet they turned in 9.75 Kelvinator sales for every 100 residential power customers in their district.

Promotional projects for the drive included employe participation plans, sales contests, unique displays and prizes offered both by the utility and by Kelvinator Corp.

EH&FA Finances Sales By Non-TVA Utility

CHATTANOOGA, Tenn.—The Electric Home & Farm Authority has authorized financing of retail sales of approved electrical appliances at Catersville, Ga., it was announced last week by David E. Lilienthal, president of the EH & FA.

Cartersville's municipal utility is the first municipal utility not served by Tennessee Valley Authority power which has been authorized for EH & FA financing.

Municipal utilities at Tupelo, Miss., and Athens, Ala., sell TVA power from Wilson Dam at the TVA rate scale, and EH & FA finances approved sales in those cities.

"EH & FA-financed sales are beginning immediately in Cartersville," said George D. Munger, EH & FA commercial manager. "Cartersville retailers of electrical appliances are applying for the necessary approval."

Sherman to Manage Sales For Stewart-Warner in Southern California

LOS ANGELES—H. E. Sherman, Jr., formerly manager of the California Majestic Co. here and prior to that associated with the Leo J. Meyberg Co., Norge distributor, has become associated with the Stewart-Warner Sales Co. of Los Angeles.

Mr. Sherman will have charge of Stewart-Warner refrigerator and radio sales in the southern California territory.

Mr. Sherman is planning a series of dealer meetings in the territory in the near future for the purpose of setting forth the newly established dealer policies of the Stewart-Warner Sales Co. and to announce the mid-season refrigeration promotion program.

N.Y.C. Servicemen's Union Says Strike Was Not Successful, But Brought It Some Recognition

By Elston D. Herron

While rambling around New York City, we asked a good many questions about the servicemen's strike there last month, and found that the answers and comments we got fell into three classifications. Distributors said, "It didn't amount to anything." Men not connected with distributorships, but interested in refrigeration, said, "It gave distributors a scare, and might have had serious effects if it had lasted longer." And this from headquarters of the servicemen's union: "It was not a success, but we got *some* recognition, at least."

There were not 800 men on strike, as some reports stated. At no time were there more than 400. The strike started June 4 and lasted until June 16. It was called to obtain recognition of the Refrigerator Workers Union, Local No. 18,992, and a raise in pay of union members.

L. C. Kilduff, business manager of the organization, told your reporter that not one of the companies affected signed the union's proposed agreement for raising salaries. Several, however, gave their men some increase in pay. And the union feels that to some extent, distributors now recognize existence of the union.

It is the claim of the union, which is affiliated with the American Federation of Labor, that there was a partial walk-out in eight concerns—Frigidaire Sales Corp., Kelvinator Sales Corp., Meadow Gold Ice Cream Co., Sam S. Glauber, Inc. (Mayflower distributor), Puro Filter Water Cooler Co., Canaday Water Cooler Co., Becker Refrigeration Service Co. (independent), and North Shore Refrigeration Service Co.

There was some picketing, but no violence, during the strike. Some companies gave police protection to servicemen who stayed at work. Kelvinator strikers were the first to go back, then men at other companies did likewise and the strike ended.

The union's Mr. Kilduff estimates that there are a total of 1,000 servicemen in New York City. During the strike, 150 men joined the union, bringing its membership to 850, he asserted, and said also that average pay of servicemen there is now about $30 per week, exclusive of car allowances. The union hopes to raise that average to $40 per week.

In the proposed agreement which all companies affected refused to sign, the union asked that the following wage scale be adopted: Mechanics with at least five years experience, $1.10 per hour; mechanics with two years of experience, $1 per hour; helpers (more than one year of experience), 75 cents per hour; apprentices (less than a year of experience), 60 cents per hour. Or, if paid by the week, $60 per week for foremen and supervisors, and not less than $32.50 for dispatchers, stock handlers, and clerks.

The proposal stated also that weekly salaries should not be less than 90 per cent of what would be paid if an hourly scale were used, and that hours should be reduced in the winter in preference to lay-off of some men. Also that servicemen using their own cars should receive $2.50 per day when working in one borough, $3 for two or more boroughs, and $3.50 for an unlimited territory—upkeep and insurance costs to be paid out of these amounts.

Another part of the proposal would limit the working week to 40 hours,

(*Concluded on Page 20, Column 1*)

Bond & Share Men View Liftop Model

(Concluded from Page 1, Column 2)

kitchen section of General Electric Institute.

Manager Zimmerman, who presided at the appliance sessions, stressed as did Sales Manager Sweeney, the importance of the new models as load builders in opening a vast secondary market for electric refrigeration and electric cookery without disturbing the present, or primary market.

Mr. Zimmerman also pointed out that this new secondary market suddenly had become increasingly important with the launching by the government of its renovation and modernization program, which is expected to liberate millions of dollars to home owners and open an immediate market of 5,000,000 prospects, or one-fourth the wired homes of the United States, for electrical appliances of all kinds.

The meeting, which was the largest assemblage of Electric Bond & Share sales executives ever held, was attended by the following representatives of the company: W. H. Burke member staff President S. R. Inch, Electric Bond & Share Co., New York; H. F. Smiddy, J. F. Derge, and J. H. Fiester, commercial department, Electric Bond & Share, New York; P. C. Tucker, Arkansas Power & Light Co., Pine Bluff, Ark.; B. DeRamus, Birmingham Electric Co., Birmingham, Ala.; T. F. Drew and H. G. Isley, Carolina Power & Light Co., Rawlings, N. C.; G. L. MacGregor and Mr. Holland, Dallas Power & Light Co., Dallas, Tex.; G. C. Kinsman, Florida Power & Light Co., Miami, Fla.; H. F. Staacke, F. Y. Brightman, and Mr. Hrivnatz, Houston Lighting & Power Co., Houston, Tex.; L. W. Brainard, Idaho Power Co., Boise, Ida.; F. H. McCollough, Kansas Gas & Electric Co., Wichita, Kan.; W. T. Hess and S. J. Watts, Louisiana Power & Light Co., New Orleans; W. E. Parrott, Memphis Power & Light Co., Memphis, Tenn.; C. M. Baldwin, Minnesota Power & Light Co., Duluth, Minn.; R. C. Anderson, Mississippi Power & Light Co., Jackson, Miss.; D. J. McGonigle and R. E. McDonough, Montana Power Co., Butte, Mont.; W. J. Krug, Nebraska Power Co., Omaha; H. E. Meade, Miss Everett, and Miss Dow, New Orleans Public Service Co., New Orleans; G. H. Wisting, Northwestern Electric Co., Portland, Ore.; G. E. Davis, Pacific Power & Light Co., Portland, Ore.; Mr. Stedman, Pennsylvania Power & Light Co., Allentown, Pa.; O. B. Kohl, Superior Water, Light & Power Co., Superior, Wis.; W. H. McInnis, Tennessee Public Service Co., Knoxville, Tenn.; G. B. Richardson and W. G. Moore, Texas Power & Light Co., Dallas, Tex.; President A. J. Duncan and R. E. Hendricks, Texas Electric Service Co., Ft. Worth, Tex.; R. M. Bleak, Utah Power & Light Co., Salt Lake City; R. B. McElroy, Washington Water Power Co., Spokane, Wash.; and C. R. Winkler, West Tennessee Power & Light Co., Jackson, Tenn.

G-E Introduces Flat Top Model for Apartments

(Concluded from Page 1, Column 3)

ing the condensing unit easily accessible. Exterior cabinet panels are finished in Glyptal-baked enamel, while the interior finish is white porcelain.

The semi-concealed hardware is made of durable hard brass, modernistic in design with chrome finish. The single action door latch makes opening of the door easy and the self-sealing feature automatically insures a tight seal when the door is closed.

Additional features of the new flat-top model are a stainless steel cooling unit, folded into shape and welded at all joints; CD-1 condensing unit, spring mounted in the bottom of the cabinet; temperature control located on the front of the cooling unit, and semi-automatic defrosting switch.

Summer Drive Begun By Frigidaire Crews

DAYTON—Presentation crews comprised of factory and distributor executives are holding more than 200 meetings this week in the larger cities of the country to tell the Frigidaire field organization about the post-season sales campaign on both household and commercial refrigeration will be opened on July 16 by Frigidaire Corp.

Departing from the usual procedure, Frigidaire factory officials have assigned district managers, distributor presidents, sales managers, and sales promotion managers to the presentation crews that will conduct the meetings. This type of meeting replaces the usual Frigidaire post-season convention meetings that were limited to 36 cities.

Immediately on the heels of the sales meetings, the national advertising campaign will break. This, according to H. W. Newell, vice president in charge of sales, consists of a factory placed newspaper campaign exceeding 1,500,000 lines, plus copy in national magazines. Billboard posters and spot radio broadcasts will augment the space campaigns.

Selling activity on household refrigerators will focus attention on the Frigidaire "super freezer." Points to be stressed in the "hot weather harvest" campaign include central location in the cabinet, super-freezing plates on which the tray rests, automatic reset, defrosting, automatic ice tray releasing, five-fold ice and dessert service, and two types of extra-cold storage.

These points will be dramatized for prospects with a demonstration that includes a cutaway super freezer to show the advantages of brass construction, the various types of ice trays used by Frigidaire, and a test showing the difference between ordinary aluminum and anodized aluminum. A solder test will demonstrate the features of silver solder, with which Frigidaire super freezers are sealed.

Theme of the commercial selling activity is based on following up the food and beverage meetings conducted by Frigidaire in 200 cities at which the sound motion picture film, "We're in the Money," was shown to almost 200,000 retailers, distributors, and handlers of foods, beverages, and meats.

Porcelain Enamelers Form Educational Bureau

CHICAGO—Formulation of an Educational Bureau organized to further promote technical and market research, advertising, and industry contact for the porcelain enameling and kindred industries has been announced by the Porcelain Enamel Institute. E. L. Lasier of the Titanium Alloy Mfg. Co., Niagara Falls, N. Y., is chairman of the bureau.

The bureau will consist of four divisions: (1) market research section; (2) technical research section, of which Richard H. Turk of the Porcelain Enamel & Mfg. Co., Baltimore, is chairman; (3) advertising and sales promotion section, of which R. A. Weaver, Ferro Enamel Corp., Cleveland, is chairman, and H. Dana Chase, Chicago Vitreous Enamel Product Co., is vice-chairman; and (4) industry contact section, whose chairman is Bennett Chapple, American Rolling Mill Co., Middletown, Ohio.

Associated System Sales In Refrigeration Reported

NEW YORK CITY—At the close of the week ending June 23 dealers competing in the Associated Gas & Electric System's annual "Cold-Air Sweepstakes" refrigeration sales campaign had sold 6,632 electric refrigerators and 33 gas refrigerators, while retail divisions of the operating companies had sold 2,757 electric refrigerators and 470 gas refrigerators.

Kansas Dealers See Norges in Color

KANSAS CITY—Moser & Suor, Inc., Norge distributor for the state of Kansas and western Missouri held its mid-summer dealer meeting June 22 at the President hotel here with approximately 750 dealers and salesmen in attendance.

Principal feature of the meeting was the introduction of Norge refrigerators in color.

Norge factory officials in charge of the business sessions of the meeting included John Knapp, vice president and general sales manager; R. E. Densmore, western regional manager; Dayton Young, in charge of washer sales; W. C. Rowles, southwestern divisional manager; and Miss Betty Appel, in charge of Norge home service.

M. E. Tinsley, general manager for Moser & Suor, Inc., closed the business session by inaugurating a new sales contest in which a trip to the World's Fair will be the prize for Norge salesmen and dealers who qualify.

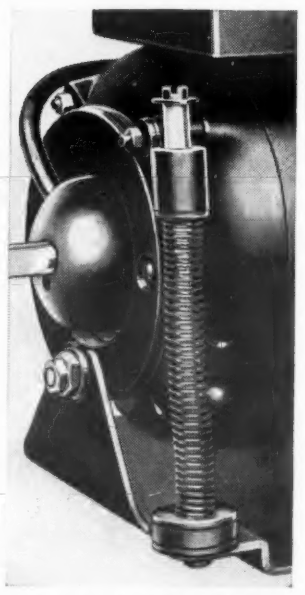
G-E Kitchen Features 'Eastern Shore' Show

SALISBURY, Md.—A General Electric kitchen, exhibited by the Hines Co. of Baltimore, was one of the main attractions at the first Electric Homemaker's Show ever to be held on the Delmarva Peninsula. The show opened June 13 at the First Regiment Armory, Salisbury, and continued for four days.

This promotional and educational event was planned and sponsored by the Delmarva Electric Association, a cooperative organization composed of Eastern Shore firms.

Feature of one day of the show was radio broadcasts by Edwina Nolan, General Electric Home Service director.

A FEATURE *Typical*
OF DELCO VALUE—
PATENTED AUTOMATIC
BELT TIGHTENER



Note detail of belt tightener with snubber at top of spring.

The patented automatic belt tightener is a feature which typifies the value that Delco is building into its refrigerator motors. This new device consists of a spring which, by acting against the pull of the belt, maintains the proper tension to compensate for the stretch and wear of the belt. A snubber at the top of this spring provides just enough friction on the rod to rectify any variations in torque which might tend to make the motor oscillate. The development of this device is added evidence that Delco engineers are always improving their product so that it requires less and less care after installation, with consequent greater satisfaction to the refrigerator owner. This is one of the reasons why most of the better electric refrigerators in use today are Delco-powered.

DELCO PRODUCTS CORPORATION
DAYTON, OHIO

"I'm feeling GREAT —thank you"

And you have reason to feel satisfied, Mr. Frigidaire dealer!

Your sales have exceeded those of dealers selling any other make of electric refrigerator, by more than a million and a quarter units.

And, since the introduction of the Frigidaire '34, you have sold 45% more household Frigidaires than have ever been sold during any other similar three months' period in Frigidaire history!

Such records speak for themselves. They suggest, to wide-awake dealers everywhere, the wisdom of investigating the Frigidaire franchise — now. Frigidaire Corporation, Subsidiary of General Motors Corporation, Dayton, Ohio.

Frigidaire

A Product of General Motors

BY G. F. T.

Leonard at the Fair

Out on Plymouth Road last week we were upbraided. Rather severely upbraided.

"You told all about the Kelvinator exhibit at A Century of Progress," stormed the upbraiders, "but you didn't say a thing about the Leonard exhibit."

And that's an omissive error which we hasten to rectify.

Two sound films, "Gentlemen Prefer Beef" and "Pie Takes a Holiday," are high points of the Leonard exhibit at the 1934 A Century of Progress exposition. The movies, presented in a completely equipped theater that adjoins Leonard's main display space on the second floor of the Electrical Building, carry the Leonard story to daily increasing crowds of visitors.

The Leonard theater is air conditioned and can accommodate 100. (It is not to be confused with the Kelvinator theater.) Interest in the Leonard show is heightened by the personal appearances of "the man who grows," Clarence Willard, whose performances on the crystal stage across the corridor from the main display draw attention to the attractions in the auditorium. Willard is also bringing in "guest stars."

Featuring all lines of the company's refrigerators and water coolers, the entire Leonard exhibit is so arranged that it easily catches the eyes of both the first and the second floor traffic.

* * *

Mercury Vapor Lighting

The scientific search for artificial illumination equal in quality to natural daylight, has resulted in a new light source, the high-pressure mercury vapor lamp, which will in combination with incandescent electric lamps, provide illumination with all the elements of normal daylight.

Westinghouse engineers have used this new development for the first time for the lighting of the Ford Motor Co.'s Exposition Building at A Century of Progress in Chicago.

More than 500 of these new lamps will be used in the Ford Building. Each lamp consists of a long tubular bulb from which the light is intensely brilliant and greenish bluish in color. Its characteristics are quite different from the lamps that have

Workers at the Ford exhibit labor under mercury vapor lamps.

used mercury vapor heretofore, as, due to the high temperature and pressure, the color is much closer to that of the sky.

In addition, these unique lamps produce more than twice as much light for the same power consumption than previously available similar types, each providing 50 lumens of light per watt, whereas the ordinary incandescent lamp produces not much more than 20 lumens per watt.

The new lamps are used in combination with modern Mazda lamps in order to obtain the color elements found in natural daylight. For that reason, combination reflectors have been developed.

These are of two types, one a trough type unit containing two 400-watt, high-pressure mercury vapor lamps and three 500-watt incandescent lamps; the other a cylindrical unit containing one 400-watt mercury lamp and six 100-watt Mazda lamps. The unit also required the development of special transformers.

The light produced by the new mercury lamps appears greenish-blue in color, and lacks the red and yellow rays, while the light of Mazda lamps appears yellowish white because it contains an over-abundance of red and yellow rays and is relatively weak in green and blue rays.

Combining the two types of lamps, therefore, in one reflector, provides a unit with which light can be blended in the proper proportion to approach true white light—which contains equal proportions of all colors.

* * *

Hall of Science

Unfolding its dramatic story in simpler, more direct terms, and in a score of striking new exhibits, the Hall of Science is still the No. 1 attraction at A Century of Progress.

Hub of the busy exposition grounds, the vast building sprawled on the shore of the lagoon again offers eight acres of exhibits to show how man, chiefly during the century which the fair celebrates, has harnessed natural forces to supply his needs, to cater to his comforts.

Visitors who enter the great hall at the head of the Avenue of Flags admire its new decorations as they marvel at its new exhibits. Exposition colorists have redressed it in white and mulberry and green, with splashes of orange and yellow. The symbolic statue at the entrance has been given a gilt coat, but not the loin cloth or fig leaf demanded by last year's prudish visitors.

Within, chief changes have been made in the medical section. Here, as in other sections, abstract, dead exhibits have been replaced by simpler, mobile ones. A year's experience in showmanship taught fair officials that the public wants displays the average mind can comprehend, and it wants its exhibits in motion—if possible.

No more striking picture of why there is a celebration, and why the century ended last year was one of progress, can be found than that given in dry statistical form by the Chicago Medical Society's new booth.

It shows the decline of diseases, due to ever-advancing scientific effort, in the 100 years from 1833 to last year. It gives the number of deaths per hundred thousand in Chicago. It reads like this:

	1833-58	1903-33
Small pox	19.1	.03
Malaria	42.8	.1
Typhoid	65.5	.4
Tuberculosis	248.3	57.5
All deaths	3,390.	975.

Readers of mystery yarns are attracted by "Death Demands Investigation," an educational display by the Institute of Medicine, urging that the office of coroner be abolished to be succeeded by that of a medical examiner.

Crowds throng the Chicago Rapid Transit Lines exhibit, where toy electric trains demonstrate how accidents happen, and how they can be avoided, and where first-aid teams give demonstrations of rescue work.

Back again, after a six months' rest, is the medical robot who obligingly explains his physiology to crowded lecture rooms. He has been given a new, handsomer rubber head, but tells the same story.

New exhibits cannot detract from the popularity of some of the old ones. Crowded again is the main hall of the building, where the geological time clock ticks out in a few minutes the world's history for 2,000 million years, from remote preplanetary times until our own.

Beside it is the skeleton of Commander T. G. W. Settle's stratosphere gondola, with the log and instruments he used on the epic ascension with Maj. Chester L. Fordney last Fall. Above it is suspended the gondola of the balloon in which Auguste Piccard made the first stratospheric ascension in history.

New to fair visitors is an exhibit explaining the recently discovered "heavy water," which won the Gibbs medal last year for the researcher who found it—Dr. Harold B. Urey.

Across eight screens flash enlarged motion pictures of minute life in water drops. Most popular feature of last year's biology section, the Micro-Vivarium theater, which projects the microscopically enlarged pictures, has been doubled in size for the 1934 exposition.

Greatest attraction added this year is the outdoor magic show which is given daily in the court of the Hall of Science. A new stage has been built at the east end of the court, and 10,000 people may witness scientific marvels which officials promise will be as exciting a form of entertainment as the fair can provide.

One of the "acts" to be shown will be operation of a complete radio station whose operators will communicate with 60 countries about the globe.

Early June visitors to the Fair missed much of the show the Hall of Science will provide when all exhibits have been completed. For the man who wants to know (and thinks he can understand), there now may be seen graphic and comparatively simple explanations of the Einstein theory of relativity and of the Fourth Dimension.

The exhibit of Detroit's Henry Ford Hospital shows uses of oxygen therapy in the treatment of pneumonia, and the tannic acid method of treating burns. Fascinating uses of water and heat in therapeutics are demonstrated by the federal government in an exhibit from the Hot Springs (Ark.) National Park.

* * *

Porcelain House

Almost a million and a half people visited the porcelain enameled frameless steel house at the World's Fair last season. Yet, in spite of the pounding it took, it emerged structurally as sound as a dollar, attendants will tell you.

The house has been opened to visitors again after being completely remodeled and refurnished. A different colored porcelain enamel exterior is now to be seen. This was easily accomplished because the flat panels of porcelain enamel are held in place with a grooved clip-strip of stainless steel. Changing the exterior merely involved slipping the old porcelain enameled metal out of the clips and inserting the new.

This steel house was built for American Rolling Mill Co. of Middletown, Ohio, and Ferro Enamel Corp. of Cleveland, by the Insulated Steel Construction Co. of Middletown, Ohio, using its frameless steel method of construction.

By this method specially formed sheets of steel are factory fabricated into large house-high wall sections and wide floor sections. On the site these sections are quickly assembled. The different pieces are welded together in the factory. In the field the large sections are joined with sheet metal screws.

Planned for comfort, this house contains eight rooms, plus a utility room and penthouse. It is rigid, fire-resistant, bug-proof and lightning safe. The entire home is insulated and sound deadened.

On the left of the parent house, and of the same construction, is a little *guest house*, containing a large living room, alcove, bath, bedroom, and kitchen. It is suited to the needs of the small family, or the year-'round seashore cottage. This little house—new this year—is an exact duplicate of one purchased by the government and recently erected in the Tennessee Valley development.

* * *

Bibliophile

BEN UNWIN

Copeland's advertising counsel, is a collector and connoisseur of rare books. Here he is shown browsing in the editor's library.

Loud Speakers

Radio and its kindred "p. a." (public address) system speakers are playing stellar roles at the Fair this year. Music by the Chicago and Detroit Symphony orchestras, as well as concert groups led by Palmer Clark and Edward Wurtzebach, are entertaining midway strollers and listeners-in everywhere. Literally dozens of "name" orchestras will flood the world with harmony and rhythm originating at the Fair.

Special stands, patterned on the order of regular orchestra "shells," but augmented by powerful amplifier equipment, will make it possible for Fair visitors, seated comfortably blocks away, to hear every note.

A high spot of the radio exhibits is a group of working models of amateur radio stations. Youthful operators, who built the equipment themselves, are there to show how it works.

It is possible for Fair visitors to send radiogram greetings to the folks back home—free of charge! The boys operating the amateur stations will do this to demonstrate their sets.

Networks, too, are using short waves at A Century of Progress. Bob Brown's "words-eye-view" of the spectacle has been picked up, for instance, as Announcer Brown rode atop a truck. Inside the truck was a portable 8-meter transmitter which flashed the mikeman's words to the Merchandise Mart NBC studios, where they were placed on regular network lines.

* * *

Agriculture

Farmers who visit the Agricultural building at A Century of Progress will be glad to find that remote control on the farm no longer signifies an eastern mortgage holder, but means working a tractor while you sit in the parlor.

The latest thing the International Harvester Co. is showing is a tractor which cavorts on a lot 150 by 84 feet just outside their exhibit space. Working with a 3-foot "aerial," it is fully controlled through an apparatus similar to a radio set.

The same company has installed a binding twine machine which makes twine by the prepared sistomatic process. The machine differs from the market models only in having celluloid covers through which the processes can be seen. Iron covers are used in the factory units. Beside this device is a machine which automatically ties the twine around the sheaves of wheat, and a testing machine which shows that the twine has a tensile strength of about 106 pounds.

The exhibit of the agricultural department of the University of Illinois is arranged to tell the story of how farming has been made efficient. On a 40-foot relief map the typical quarter section farms of 100 years and of 50 years ago, with timber land and swamp land, are contrasted with the farm of today, tile-drained, arranged for easy crop rotation, and with proper buildings.

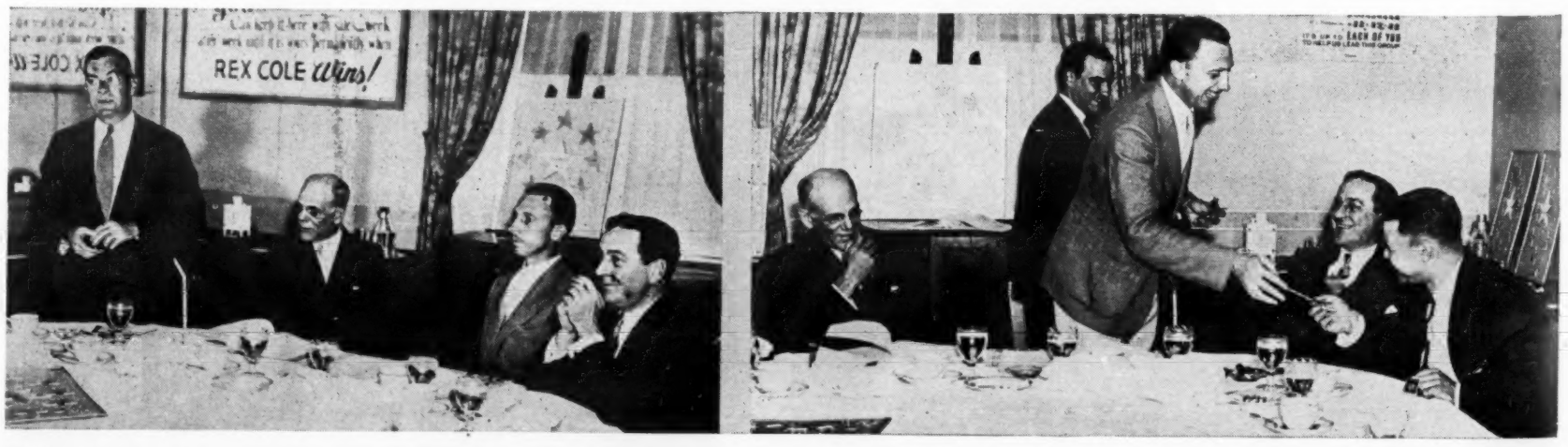
The exhibit includes material on the latest techniques in soil chemistry, soy bean raising, horticulture, home economics, dairy work, cattle and swine raising. Results of boys' and girls' farm club work are also shown.

The householder will find in the food section of the building demonstrations of actual processes in making and preparing all sorts of foods. And sometimes free samples are available. That's where we came in, brother.

Sales Executives Tune in New Grunow All-Wave Radios

General Household Utilities is leading the parade this summer by bringing out an entirely new line of radios. This new line possesses all-wave reception facilities, and features the Signal Beacon device for easier tuning. (1) H. C. Bonfig, vice president in charge of sales, tunes in one of the new all-wave models in his office. (2) H. H. Kunkler of the sales department checks through initial distributor's orders for this new line. (3) J. H. Rasmussen gets down to business as he tunes in Turkey— or maybe it's Singapore, or Cape Town, or Reykjavik, or even Melbourne.

Two Gentlemen from Cleveland Walk in on Rex Cole



Walter Daily, sales promotion manager, and Jean deJen, contest manager, of the General Electric refrigeration department, recently visited Rex Cole, New York G-E distributor, to present awards in G-E's discovery drive. (1) Walter Daily (standing), Mr. Cole, Mr. deJen, and Henry Stevenson, general manager of Rex Cole, Inc. (2) Messrs. Cole and Stevenson watch deJen present a letter-opener to Paul Hichborn, Cole's retail sales manager.

KELVINATOR ANNOUNCES THE

Electric KELVIN-CHEST

An electric refrigerator at $77.50 is in itself news. But, *a Kelvinator* at $77.50 is BIG NEWS—both for the dealers and for the public.

Temperature Selector with 8 Freezing Speeds

The Kelvin-Chest is a real Kelvinator. It has the standard Kelvinator compressor, the same fine unit that is used in higher priced models. It has a TEMPERATURE SELECTOR WITH 8 FREEZING SPEEDS; two large ice cube trays (42 cubes); porcelain interior; permanent white lacquer exterior; Kelvatex insulation *all around;* porcelain table top; removable basket for vegetables; etc.

$77.50 plus Freight

With the announcement of the Kelvin-Chest, four great new markets are opened up for Kelvinator dealers. First—the hundreds of thousands of small homes and apartments. Second—summer cottages, hunting lodges, etc. Third—roadside stands and other limited commercial applications. And fourth—medium and large sized homes in which the Kelvin-Chest will be used for beverage cooling and extra storage space. Four big markets that offer an unlimited opportunity for volume and profit.

Complete information will be sent on request. . . . KELVINATOR CORPORATION, *14250 Plymouth Road, Detroit, Michigan. Factories also in London, Ontario, and London, England.*

Actual photograph of food stored in Kelvin-Chest at one time . . . pound of butter . . . dozen eggs . . . 4 pound roast . . . 3 pints of milk . . . ½ pint of cream . . . 6 beverage bottles . . . pound of sliced bacon . . . 4 steaks . . . 4 pork chops . . . 6 lemons . . . 6 oranges . . . bunch of radishes . . . 3 tomatoes . . . 1 cucumber . . . 2 bunches of celery . . . 2 peppers . . . bunch of carrots . . . head of lettuce . . . bunch of parsley . . . 2 packages of cheese . . . 1¼ pounds of cold meats . . . 6 peaches . . . 6 plums . . . 2 cans of milk . . . jar of jelly . . . jar of salad dressing . . . 3 dishes of left-overs . . . and the two ice cube trays (42 cubes).

4 GREAT *new* MARKETS

FOR SMALL HOMES AND APARTMENTS

FOR SUMMER COTTAGES, HUNTING LODGES

FOR ROADSIDE STANDS, ETC.

A SECOND REFRIGERATOR FOR BEVERAGE COOLING

KELVINATOR

Mail this to-day

KELVINATOR CORPORATION
14250 Plymouth Road
Detroit, Michigan

Please send free descriptive folder on the new electric Kelvin-Chest.

*Name*_____

*Address*_____

*City*_____ *State*_____ (911)

BEER COOLING

Ohio Dealer Reports Varied Installations of Beverage Coolers

PORTSMOUTH, Ohio — Mechanical Refrigeration Service Co. here has recently made installations of electrically refrigerated beverage dispensing equipment for a hotel bar, a cafe, a night club, a 5 & 10 cent store, and a department store.

The installations were made by E. L. Minch, Kelvinator installation and service man.

A Brunswick-Balke-Collender bar in the Hurth hotel has been equipped with a Temprite draft beer cooler, a bottle cooler, and an ice maker, operated by a 1-hp. Kelvinator condensing unit.

A 3-hp. Kelvinator condensing unit supplies refrigeration for the Brunswick-Balke-Collender bar installed in the Superior cafe.

The Winter Garden night club has two Brunswick-Balke bars equipped with ice makers, bottle coolers, and 3-tap Temprite draft beer coolers. A Kelvinator 3-hp. 4-cylinder condensing unit supplies refrigeration for these bars and for a 10x10x10-ft. walk-in storage cooler.

The S. S. Kresge Co. has purchased a ¾-hp. Kelvinator condensing unit to refrigerate a soda fountain and a root beer barrel dispenser.

Three model CW612 Kelvinator water coolers have been installed in Marting Bros. department store.

Cleveland Night Club Equipped by Servel

CLEVELAND—The Riviera Club on Harvard Ave., one of the largest night clubs in northern Ohio, housing two bars, a dance floor, adjoining restaurant service, and a grill room on its two floors has been equipped throughout with Servel refrigeration.

A two-spigot bar located in the basement, and a four-spigot bar on the main floor are each equipped with copper tubing refrigerant coils immersed in sweet-water baths.

Preservation of a big stock of fowl and other meats, perishables, and green vegetables is accomplished by means of a large storage cooler.

The smaller meat compartment has been converted into a freezing room by means of flat steel-pipe coils operated by a Servel refrigerating machine unit, the temperature being held at 15° F.

In the larger compartment a Servel model HC-70 Humidraft forced convection cooling unit, maintains a temperature of from 38 to 40° F.

The entire system, including a small grocery box in the kitchen, is operated by a single Servel 2-hp. water-cooled condensing unit.

Temprite Installation In Chicago Serves 12 Beer Spigots

CHICAGO—When thirsty customers visit the tap room of Chicago's Ashland Boulevard Auditorium, they receive their beer from a newly installed Kelvinator-Brunswick bar having a 50-ft Monel metal workboard with three tapping stations, three mechanically refrigerated bottle boxes, and two nine-hole set-up racks, together with an ice-cube-maker for iced drink service and an eight-foot refrigerated back counter.

Under counter refrigeration includes three Temprite tap coolers, two with capacities of 50 gals. per hour and one of 30 gals., handling 12 beer and three water faucets. A large storage cooler pre-cools 15 full barrels at once by forced convection. A 3-hp. Kelvinator compressor handles all refrigeration requirements.

Ashland Boulevard Auditorium twice this year has entertained crowds that taxed the capacity of the beer-cooling equipment to its peak.

On these occasions beer was tapped from 12 barrels at one time. On two other occasions, the Temprites handled beer from 10 barrels at one time.

At one time a "free-for-all" was allowed with those in attendance being allowed to draw their own beer, but even under such conditions the temperature of the beer did not go above 42° F., according to the bartenders in attendance.

Merriam Uses Coach to Display Russ Coolers

SCHENECTADY—A. Wayne Merriam, Inc., General Electric distributor for this part of New York state, is using a sales coach equipped with beer-cooling equipment to assist dealers in selling Russ beer coolers with G-E refrigeration.

The coach with the beer equipment is put on display in a centralized locality convenient to several dealers as a group. The dealer brings his prospect to the display where a complete demonstration is given by the distributor's specialist on beer cooling.

The coach is at the place specified from 2 o'clock in the afternoon until 6 o'clock, and from 6:30 p. m. on into the evening as long as the prospects keep coming.

Temprite Beer Coolers Used in Venice Inn

KANSAS CITY—Venice Inn, swank cafe at 305 E. 12th St. here, has been equipped with a 90-B3 and 65-B2 Temprite beer-cooling units. A Kelvinator unit supplies the refrigeration.

Choose from 21 Models

Copeland offers 21 distinct models of Commercial Condensing Units, in sizes from 1/6 to 3 H.P., air and water-cooled, with one, two and three cylinder compressors.

Included in the line are 15 models for standard installations, three models for low temperature applications, and three gasoline engine driven models.

The efficiency of Copeland design in actual performance is attested by thousands of users located all over the world. Correctly engineered, Copeland units are built to precise specifications in one of the most modern plants in the industry.

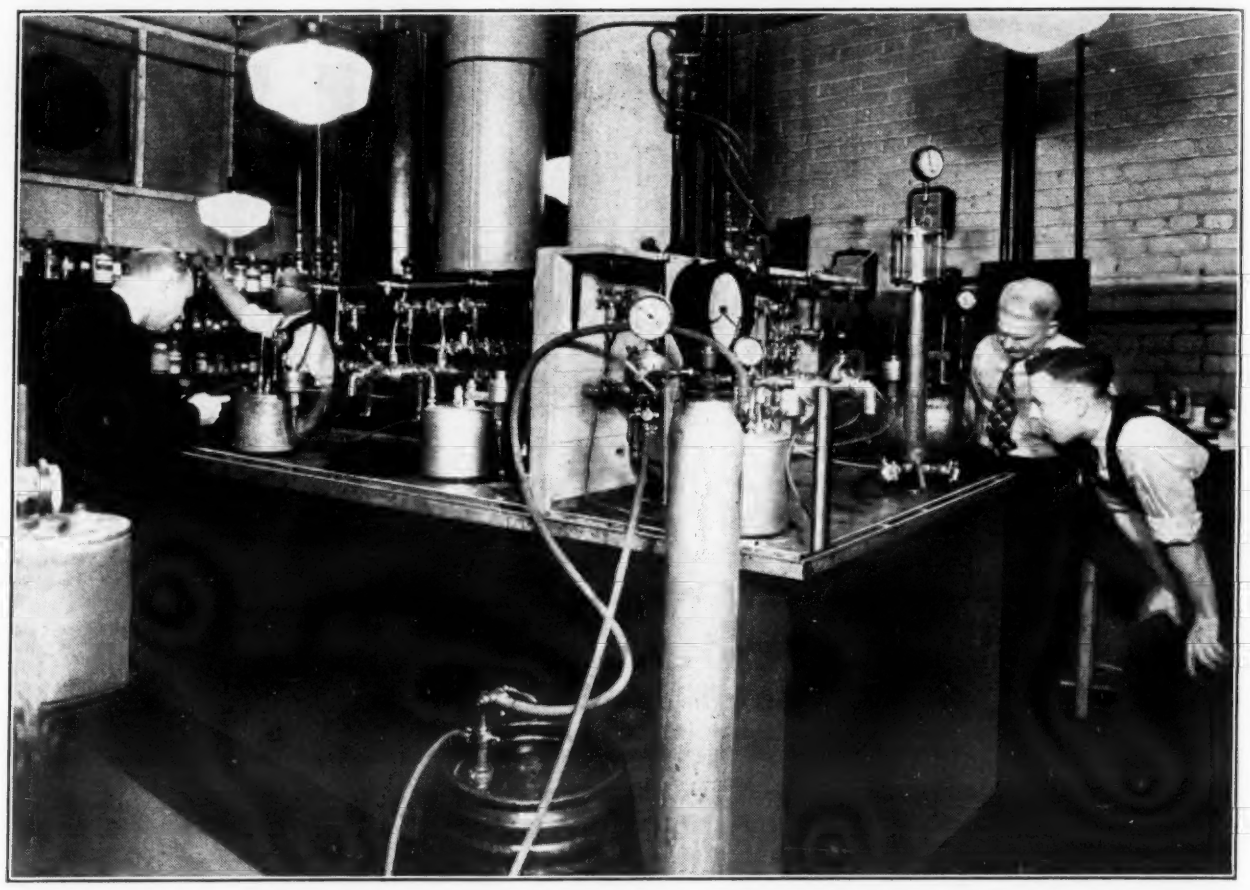
A new booklet, describing the Commercial line in detail, has just been released. A copy is free for the asking.

Distributors seeking a connection which enables them to fill every refrigeration need are invited to write for our money-making proposition.

COPELAND REFRIGERATION CORP., Mount Clemens, Mich.
Division of Winslow-Baker-Meyering Corp.

Copeland
DEPENDABLE ELECTRIC REFRIGERATION

In Temprite Products' Experimental Laboratory



Busy at work in the laboratory of Temprite Products Corp. are (left to right) H. B. McLaughlin, chief engineer; Warner Pierson, chemist; J. M. Johann, factory superintendent; and James Goodwin, assistant engineer. The three large tanks at the rear contain three different kinds of refrigerants for experimental purposes. Messrs. Johann and Goodwin are watching the beer temperatures recorded by an experimental glass-enclosed unit.

Chief Engineer Explains Factory Test Procedure on Temprite Beer Coolers

By H. B. McLaughlin, Chief Engineer Temprite Products Corp.

TEMPRITE coolers are taken from the production line (periodically) for a laboratory test including a preliminary water run, followed by a thorough trial with actual beer.

First step in this test consists of inserting two special fittings, one in the beer inlet and one in the beer outlet. These fittings are made up in the form of a "T," and have a thermometer with the mercury bulb so situated that it is directly in the stream of water flowing through the Temprite cooler. (See illustration).

The first thing checked, after the refrigerant lines are hooked up, is the minimum temperature of the refrigerant. This temperature is taken by allowing the water to stand in the beer line for five minutes and then the faucet is opened and the water is driven past the exit thermometer.

This thermometer reading, when at its lowest point, is taken as the minimum refrigerant temperature. (The control valve has been previously set on the production line to 36° F. with a minimum setting of 35° F.) With the setting of 36° F. the cooler is checked for its capacity.

This capacity must be in excess of the catalog rating on a four-degree temperature differential, that is, if the refrigerant temperature is set for 36° F., the water is permitted to flow through the cooler as rapidly as possible until the exit temperature is exactly 40° F. then, by the aid of a quart container, and a stop watch, the actual gallons per hour are determined. This capacity is determined exactly using 50, 60, 70, 80, 90, and 100° F. inlet water.

While a four-degree temperature differential is used in determining the catalog rating, that one exit temperature does not satisfy the engineering laboratory that the cooler is right at every point, so with the same minimum temperature of 36° similar tests are run with the exit temperature from 38 to 45° F.

One of the specifications is that the cooler must not frost the suction line under any of the above conditions.

The above results are plotted in the form of curves on one sheet of cross-section paper so that the entire characteristics of the cooler can be determined at a glance.

The next operation is to test the cooler with beer. A keg of beer is tapped and the pressure under which it is delivered is taken. This is done by screwing a gauge with a beer fitting directly into the end of the tapping rod and opening the valve.

The gauge is removed and after approximately a quart of beer is drawn out the temperature of the beer is taken. The pressure and the temperature of the beer are checked against a beer saturation chart. This gives us the volume of carbon dioxide per volume of beer.

This figure is usually very close to two and a half volumes. However, if the keg has leaked off part of the gas, the carbon dioxide volume may be greatly reduced. This would cause any cooler to draw flat beer, while if the carbon dioxide volume is greatly in excess of two and a half, the beer is considered "wild." Should this condition exist, beer may be perfectly drawn by means of the temporary increase of from five to eight pounds pressure on the keg, resuming normal pressures for the next keg.

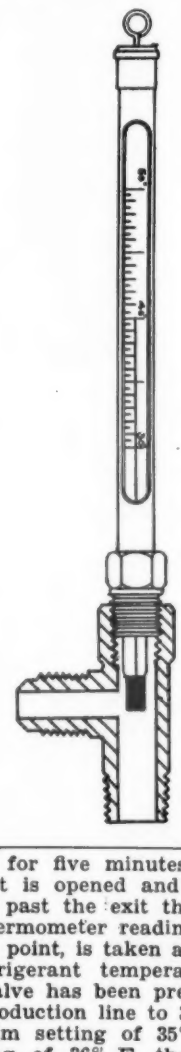
Beer tests are conducted in the Temprite laboratory under conditions approximating the field as closely as possible and include drawing enough glasses of beer to correspond to the rated capacity of the cooler and drawing beer at irregular intervals using only a fraction of the actual capacity of the cooler. This permits a positive check on the rate of flow of the beer through the cooler, together with the exit temperature at a particular rate of flow, and the amount and general characteristics of foam in the glass.

Temprite standards require that the exit beer temperature should be 40° F. and the rate of flow sufficient to fill a 10-ounce glass in three and one-half seconds with 12 pounds pressure on the keg. This pressure should be used when the keg is on the same level as the cooler. If it is lower, additional pressure must be used.

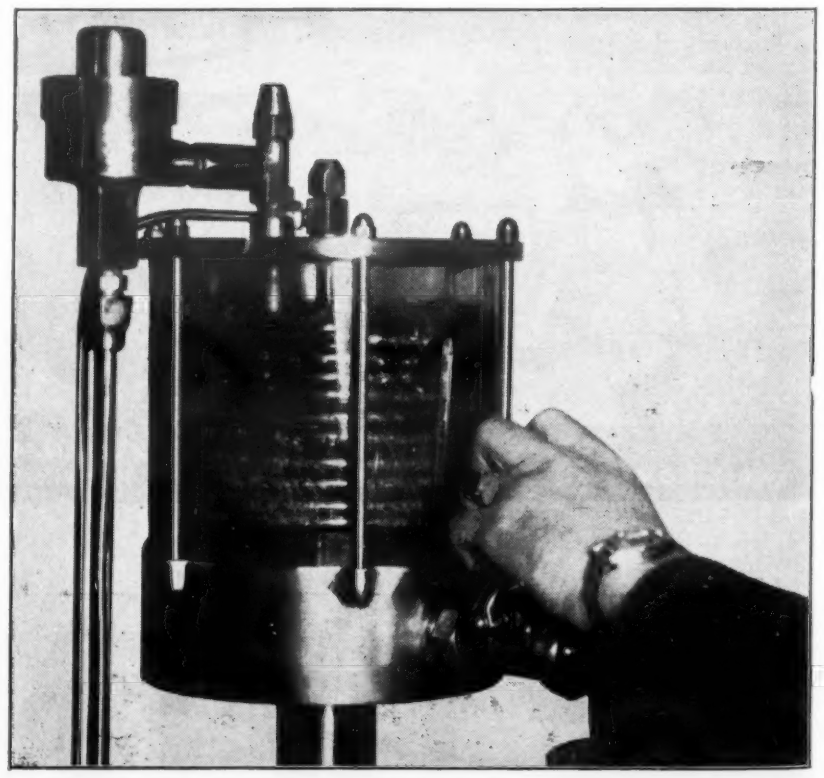
The foam is carefully observed and at this specified pressure should be approximately 30 per cent per glass. It must be of good consistency, rich in appearance and be able to hold up in the glass for several minutes.

After satisfactorily meeting all of the above requirements, the cooler is declared to be ready for use in the field.

Thermometer Fitting



Refrigerant in Action



Through this glass-enclosed model Temprite engineers can observe the refrigerant as it bubbles into activity around the beer coils.

Seeger's Experience in Designing Beer Coolers Traced from Start

Seeger Refrigerator Co.
St. Paul, Minn.
July 3, 1934.

Editor:

I have your letter relative to information desired on the Seeger all-steel beer-cooling equipment and our activity in the beer-cooling field.

The best way I could tell you this would be to sit down with you and tell you how we started into this business and the phenomenal sales that we have had in our all-steel beer-cooling equipment.

In March, 1933, President Roosevelt made it possible for beer to be legalized and there immediately began considerable activity in the beer-cooling field. Practically everybody had an idea and almost everyone wanted to revolutionize beer cooling.

We were on the fence as to what was necessary to be manufactured for beer cooling. It was almost impossible to get in touch with the breweries because of the great amount of pressure that was on all the brewery departments at that time in getting started in their business.

A Start from the Breweries

It just so happened that a very good friend of ours doing considerable printing for us also was printing bottled beer labels for quite a few breweries. He arranged for an interview with the vice president and general manager of one of the large western breweries and we were informed that the novelty box would be the real big seller in the beer-cooling field and that we could practically ship them as rapidly as they could be built.

We had never seen a novelty box before. We got one from the brewery, figured its cost, photographed this box, got out a circular and we were in the beer-cooling business.

We had no idea that it was going to reach the volume it has. As a matter of fact we quoted a price to the brewery, above referred to, and they bought 100 of them at once which almost took our breath away and it meant practically a $9,000 order.

Introduction of All-Steel Line

We followed this up by calling on some two or three other breweries and before the day was over we had about $30,000 worth of business. Bear in mind, that this was in March a year ago following the bank holiday, when everybody's business was at the low ebb. Immediately in the beer-cooling field everybody with a hammer and a saw started to build wood novelty boxes. The result was that there were many kinds of boxes built. As rapidly as we could we switched our novelty box to our present all-steel line, which is beautifully finished in grained walnut, mahogany, or a very attractive dark olive green. The walls are heavily insulated, the doors are rubber gaskets, the locks and hinges are chromium, the faucets are chromium plated, the perforated top drain is porcelain, and the sinks are porcelain.

We were, I would say, the first in the field with the all-steel novelty box, and I know we were the first with the porcelain sinks, which met with instant favorable acceptance.

Effect of Brewers' Code

One of the unpleasant tasks in the old saloons or modern taverns was the polishing of copper sinks and fixtures. These sinks would become dirty, smell very badly, due to the fact that the beer drippings from the faucets, would adhere to the metal surfaces, whether it was copper, stainless steel, or other metals. Some became black, some greasy, which all was unsanitary, and, took hours of scouring and polishing to get them clean, whereas with a porcelain sink, as you know, all that would have to be done would be to wipe them clean and sanitary with a damp cloth, which would take only a few minutes.

A large volume of our business was direct with the breweries up until the brewers' code was signed which prevented making purchases of beer-cooling equipment direct. This code was effective on December 4. Up to that time we served not only the breweries here in the west, but the larger national breweries in the United States, and our success with them, the satisfactory results that we received, was certainly very pleasing, indeed.

A Call for Electrical Refrigeration

On April 6, when beer was returned, we must have shipped out close to 200 novelty boxes through some of the Twin City breweries. The next morning, on April 7, we had requests from 27 small towns in Minnesota and Wisconsin for information as to what could be done towards equipping these novelty boxes with electrical refrigeration.

No electrical manufacturer as far as we know had any coils designed. The breweries got us on the phone and told us to get busy and get those boxes working because it meant sales of beer for them. We got together the best service men of the different machine people of the Twin Cities and by 3 o'clock, in the afternoon, we were making up refrigeration coils designed for the novelty box.

On the morning of April 8, some 30 odd coils had been installed with ¼-hp. compressors and they were giving satisfactory service.

Some of the ice machine engineers heard this story, and have thrown their hands up in the air and to put it mild have said "fools rush in where angels fear to tread," but it was a case that it was up to us to equip these boxes with electrical refrigeration and we had successful cooperation from the Twin City service department.

The Seeger Cooling Coil

This expansion coil has been continued in the novelty box, which consists in the main of approximately 93 feet of ⅜-in. tin copper tubing with approximately 12 feet arranged to be submerged in the water or non-freezing bath in the compartment containing beer coils and the balance of the coils in the compartments over the keg compartment for cooling that part of the novelty box. That part of the coil in the bath is designed so as to govern the amount of tubing necessary to submerge by raising or lowering that part of it.

While installing these coils the expansion valve should be connected so as expansion will take place in that part of the coil refrigerating the keg compartment first and the bath last. The bulb of the thermostatic valve may be attached on the coil proper just where it leaves the bath. Very little drier coil is necessary with SO_2 but Freon jobs should be equipped with the usual length of drier coils.

Operation of Expansion Valve

An automatic expansion valve (S-10 for SO_2 or S-20 for F-12 and methyl chloride) can be used satisfactorily on single installations with a thermostat control for the compressor, although this same type job can be operated with a thermostatic expansion valve (TS-10 for SO_2 or TS-20 for F-12 and methyl chloride) by using either a thermostatic switch on the compressor.

The expansion valve should operate at about 1 lb. to 1 in. constant back pressure with a cut out on the snap-action valve or compressor switch (if a unit installation) of approximately 4 to 5 in. and 6 to 7 lbs. to cut in.

We have found that a non-freezing bath is much better than water in these bars, preferably calcium chloride brine, using approximately 1½ lbs. of calcium to a gallon of water. A 30 to 32° F. temperature should be maintained in the bath with an average keg compartment temperature of 40 to 50° F. This will produce a 38 to 40° F. beer at the rate of approximately 5 gals. per hour, if delivered to the customer from the brewery as cold as it should be.

Have Wide Distribution

Very little drier coil is necessary on these jobs. Therefore, the expansion valve bulb may be fastened on the suction line back a short ways from where the line leaves the cabinet or on the second turn from the top on that part of the coil projecting out of the beer-coil compartment on the later type coils.

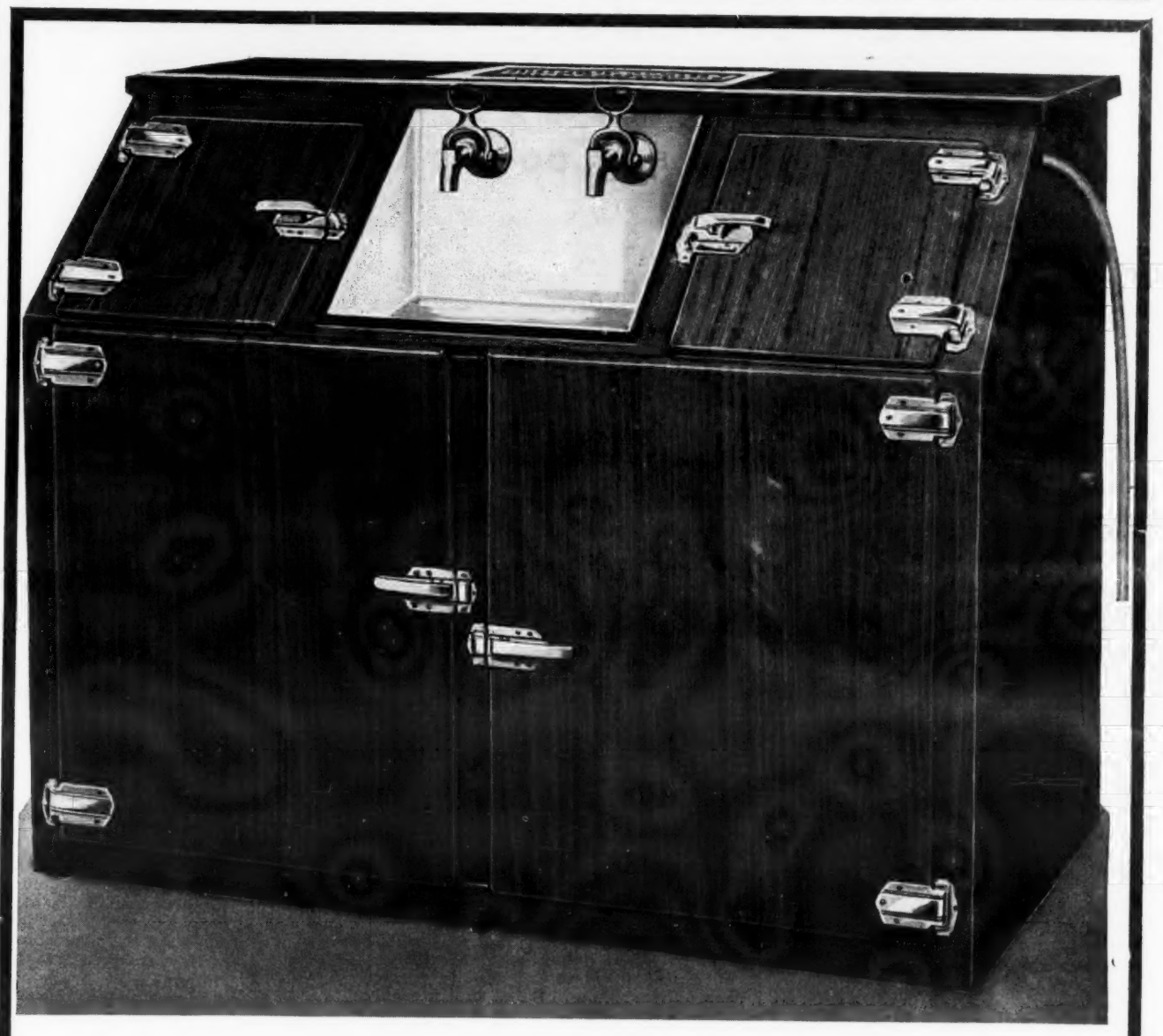
We sold thousands of these novelty boxes with these coils that went as far north as Juneau, Alaska, as far south as Mexico City, and a good many were sold in Honolulu, and with a very few exceptions they have been very satisfactory even in our southern climate. We expanded our beer line quite rapidly with beer dispensers or coil boxes, radio boxes, or small dispensers, large storage coolers, bottle chests, bottle coolers, and in September, we announced our Super 67, high-speed coolers.

Seeger's "High-Speed" Cooler

This Super 67 was a specially designed novelty box with TT-12-CC Frigidaire high-speed cooling installed in the box. We certainly selected a very good time to announce this particular unit. It was shown at the brewery convention in September and about that time the breweries began to get an over production and they became extremely active in beer-cooling equipment. The new breweries came into the field at that time and the result in this active market is better installations with the result that we sold a great many of these high-speed coolers. We were urged by quite a few of our good friends by this time in the brewing industry, to come out with a complete all-steel front and back bar.

We were rather relucant to do so because this type of fixture was just a little bit out of our field but they kept after us telling us about the difficulty with cockroaches, etc. with the old-time bar. We, therefore, announced the all-steel bar the last

(Concluded on Page 9, Column 1)



ALL-STEEL NOVELTY CABINET

By

Seeger

SAINT PAUL

The new, comprehensive line of Beer Cooling Equipment by Seeger includes two Modern Novelty Cabinets. They are built in one and two barrel sizes, and equipped for ice or with electric cooling coils. Illustration shows two barrel size.

Seeger Novelty Cabinets are equipped with white porcelain service sink, FULL BLACK PORCELAIN TOP, white porcelain bar top drain, chromium faucets and hardware.

These Seeger Welded, All-Steel Cabinets are correctly and scientifically insulated—have full galvanized steel lining. The exteriors of the Cabinets are beautifully finished with Spar Varnish on Walnut or Mahogany grain, or Baked-On Olive Green Enamel. Completely finished, front, back and sides, so they can be placed anywhere, in the middle of the floor if desired—although it is occasionally necessary to make installations under bars already installed.

Seeger Novelty Boxes are efficient, economical and profitable to install. Seeger Beer Cooling Equipment is a fast seller with Electrical Refrigeration Dealers and Distributors.

For detailed information write

SEEGER REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA

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BEER COOLING

Temperature and Foam Control Chief Factors in Beer Cooling

By S. V. Alltmont, Manager, Liquid Cooling Division, Kelvinator Corp.

WATER coolers and beer coolers have much in common and the usual requisites of the good water cooler, such as accurate temperature control, efficient operation, high economy, cleanliness, dependability, etc., must also be found in the satisfactory beer cooler. The problem of cooling beer is, however, much more involved than that of water cooling and, therefore, in addition to all of the desirable features necessary for the good water cooler, the satisfactory beer cooler must also possess others peculiar to itself.

In considering the satisfactory beer cooler, it goes without saying, that it should be efficient and therefore economical to operate when considered from the standpoint of refrigeration. This being the case, it seems almost obvious that cooling systems employing indirect heat transfer between the refrigerant and the beer are doomed to ultimate discard because of the high loss in refrigerating efficiency, occasioned by the indirect heat transfer.

Sources of Lost Efficiency

Unfortunately the loss is not confined to the cooler alone because in order to create the initial low temperature necessary to produce heat flow through the various stages in the indirect cooler, the compressor is required to operate at a low suction pressure at which point both its capacity and efficiency are reduced.

Further than this, there is another heat loss in the cooler itself, because, by reason of its lower efficiency, its size must be increased, thereby presenting larger areas for heat losses. Considered, therefore, from the standpoint of refrigerating efficiency, the advantages all lie with the instantaneous or direct heat transfer cooler.

Why Temperature Control?

Refrigeration efficiency alone, however, does not insure a satisfactory beer cooler. Temperature control is of even greater importance and it is of much greater importance than in the water cooler. In the case of the latter, uniform temperature is, of course, desirable and is striven for, but usually no harm is done if the temperature rises a few degrees when the load is heavy and drops down below normal when the cooler is being lightly used.

This is not true with regards to the beer cooler because in the first place, change in temperature is much more easily detected by the consumer in the case of beer and the farther the temperature departs from the desirable point, the less palatable the beverage becomes.

Important as is the matter of constant temperature from the standpoint of the consumer, there is another and by some considered an even more important reason for uniform temperature, and that is the manner in which the beer draws.

The Problem of Foam

Many a bartender has been heard to remark "The first two or three glasses drew perfectly, but after that the temperature went up and all I could get was foam."

This is true because a very delicate balance exists in the beer-dispensing system between the various factors governing the drawing of the beer. Temperature is one of the most important of these factors and since the others, such as keg pressure and gas control are constant for a given keg, it follows then that the exit temperature of the beer must likewise remain constant if the balance above referred to is to be maintained and a satisfactory drink dispensed.

Three Types of Coolers

Coolers of the water-bath type in which the rate of heat transfer is slow cannot maintain uniform temperature in the face of fluctuating and heavy loads and are, therefore, unsatisfactory for that reason.

Storage type coolers in which comparatively large quantities of beer are cooled, prior to using, may be somewhat better, although they usually provide a beer which is excessively cold when loads are light and following periods of demand when their capacity is taxed their recovery is slow and time must be allowed for this recovery.

The instantaneous cooler, which cools the beer to a definite predetermined temperature at the rate at which it is being drawn, can meet the exacting demands for temperature control, required alike for consumer satisfaction and good dispensing.

Understanding Foam Control

Foam control has ever been the problem of the beer dispenser and many have been the devices developed in an attempt to accomplish it. It is not certain that the beer dispenser of the old school understood the real cause of foam and so-called wild beer but through long experience he came to know the limitations of his cooling and dispensing system and learned to operate it in a manner so as to minimize his trouble.

To understand the problem of foam control, it must first be understood that all beer contains more or less carbon dioxide gas dissolved in it. The exact quantity depends on the type of the beer and the conditions surrounding its manufacture.

Excessive foaming is caused by the release of more than the desired quantity of CO_2 gas either in the cooling or dispensing process.

If only the manner in which the beer "draws" were to be considered foam control would be a simple matter because then it would be necessary only to reduce the amount of gas in the beer to the point where an excess amount could not be liberated. In an effort to overcome their difficulties some dispensers do bleed gas from the keg.

'Bleeding' Excess Gas

There are also cooling systems which are designed to automatically bleed off what their manufacturers term the "excess" gas and thus provide a liquid which will draw without foaming. They do accomplish this result but a moment's consideration should show the fallacy of this practice.

Properly brewed beer does not contain excess CO_2 and if it is to be served to the consumer with the tang and life placed in it through the careful processes of manufacture it will contain all of its CO_2 content with the exception of that which goes to form the desirable head or collar.

The successful cooler and dispensing system is one which permits serving beer in this form and as its consuming public becomes educated to the superior qualities of such a glass of beer, any device or practice which robs the beer of its vital gas must of necessity fall into the discard.

Follows Certain Laws

Since beer is a solution of CO_2 gas in liquid, the mixture follows the laws governing such mixtures. The most important of these is that the higher the temperature of the beer the higher is the pressure required to maintain a given amount of gas in solution in the beer.

The pressure can be raised to the point where all of the gas present can be forced into solution, providing complete saturation.

The pressure may likewise be reduced to the point at which so much of the gas escapes that only foam can be drawn. This relationship obtains throughout the entire cooling system.

Satisfactory control of foam may be obtained in two ways and the difference between them explains the difference between the standard Temprite cooler and the Russ instant cooler.

The Temprite and Russ Methods

In the former a pressure lower than that necessary for complete saturation is employed and the greater the collar desired in the glass, the lower is the pressure dropped, permitting more of the gas to leave the beer as it passes through the cooler and thereby building up the collar as the beer is finally drawn into the glass.

In the Russ system a pressure sufficiently high to create saturation is always maintained and in order to increase the foam beyond the minimum which is thus produced the pressure is still further increased.

This increase in pressure does not cause the release of gas in the cooler itself but by reason of the fact that it increases the terminal pressure at the faucet it produces a greater expansion at this point when the beer is finally released to the atmosphere and the foam is produced at that point.

Stated in other words, the Temprite controls foam by the regulated release of gas as the beer stream passes through the cooler. Russ maintains a saturated condition within the cooler itself and effects the necessary release of gas at the faucet. In the Temprite system foam is increased by reducing the pressure, in the Russ by increasing it. Both systems have, as their basis the instantaneous cooler.

Use Different Pressures

The exact operating pressure for each system depends upon the type of beer being dispensed, the amount of foam desired, and the keg temperature, and is best determined by actual experiment.

With further reference to the Russ cooler it should be pointed out that since a keg pressure higher than that required to maintain saturation is maintained, the pressure on the keg should be furnished by air rather than by CO_2 gas drums, in order to prevent over-carbonating of the beer.

Although the construction of the cooler itself is of first importance in the control of foam there are other factors which vitally affect it.

Sharp edges for example or other obstructions in the beer line, tending to interfere with its smooth flow of liquid, tend to force undue quantities of gas out of solution. Foam produced by this means is said to be the result of mechanical agitation. The same principle is observed if the glass is held considerably below the faucet and the beer allowed to splash into it.

Faucet Design Important

The design of the faucet is likewise of importance. Some faucets tend to divide the beer stream as it passes through them and foam is the result. Others are slow in their operation and produce a throttling effect, which is also a cause of foam.

Still others trap a small quantity of beer when they close which because it is separated from the main body of beer becomes warm and liberates its gas. The result is an initial shot of gas when the faucet is first opened. Perfect beer may follow after the first so-called "shot" but unfortunately the harm has already been accomplished. The faucet should always be checked in cases of undue foaming.

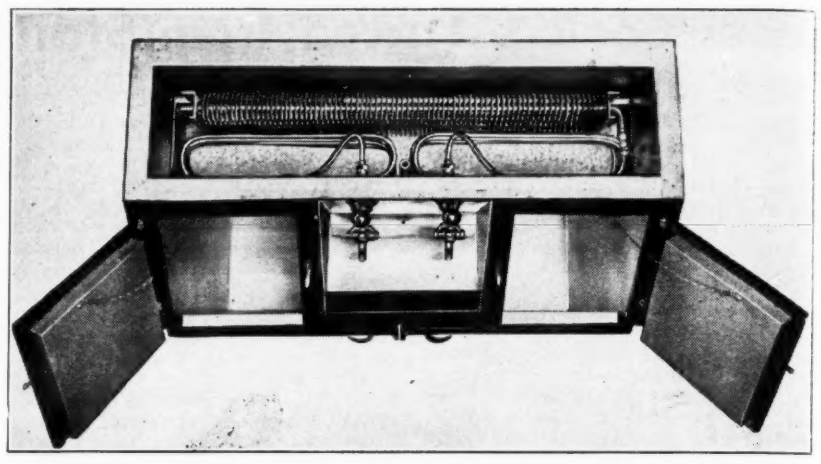
Because of its direct heat transfer principle, the Temprite cooler, when installed in multiple with other units can operate at a higher back pressure than those units, thus making its operation in a multiple system simple and efficient.

Temprites in Multiple

As a result it is the first to receive refrigeration and in a beer-cooling installation with other units connected to the same compressor this is of great value because the final cooling of the beer is of first importance and must always be provided for.

It may be agreed that overloaded compressors should not be used but in any multiple system there is the possibility of temporary overloads, which will tax the capacity of the compressor. In such instances, little or no harm is done if temporarily the pre-cooler or bottle compartment is deprived of refrigeration. The beer, however, must always be cooled and as long as any refrigeration is available the Temprite will make use of it.

Puffer-Hubbard's Coil Arrangement



The "T" shape fin coil, half immersed in water bath and half in air. Special baffle under the bath furnishes an even flow of cold air about the barrels in the cabinet.

Bismarck Hotel Bar Uses Temprite Units

CHICAGO—The 21-ft. bar in the Bismarck hotel here has been equipped with Temprite beer-cooling units.

The 17-ft. workboard includes two 30-in. tap cooler enclosures, Monel metal covered, each furnished with one Temprite 40-B3 tap cooler and one 40-B2 tap cooler.

The ½-hp. water-cooled General Electric condensing unit also serves a refrigerated backbar.

Cleveland Restaurant Installs Russ Cooler

CLEVELAND—The Chester Avenue restaurant here has opened its specially designed 50-ft. bar here, which has Russ beer cooling equipment with General Electric refrigeration.

Two special 36-inch Russ coil boxes are installed in the bar, while G-E equipment purchased included a conditioned-air evaporator for pre-cooling the beer, a water cooler and a 1½-hp. condensing unit.

G-E Dealers Sell Russ 'Foam Control' Cooler

CLEVELAND—The Russ beer cooler with instantaneous cooling unit and foam control is now being sold exclusively by General Electric distributors and dealers.

The Russ "Beer Control" maintains a high pressure in the beer keg and a low pressure at the draft arm, the pressure difference being caused by friction in the cooling coil and connecting tubing. Length and diameter of tubing in the beer lines are so selected that the right pressure drop will be obtained between the keg and the draft arms, to produce the desirable amount of foam.

Purpose of the high pressure (30 lbs.) recommended to be maintained in the keg with this system is to preserve the carbonic gas content of the beer. The solubility of the natural CO_2 gas in beer is a known amount, and to keep this amount of gas dissolved in the beer, definite pressures and temperatures must always be maintained, or else the gas will come out of solution and produce what is known as "flat" or "stale" beer.

The chart shows the pressures that must be maintained at various temperatures in order to keep the carbonic gas in solution.

* * *

Restaurant Installation Handled by 1-hp. Unit

MIAMISBURG, Ohio—Handling beer at a peak rate of 10 half-barrels a day during the summer season, the 1-hp., high suction pressure Kelvinator condensing unit installed in Weaver Brothers restaurant here maintains a constant temperature of 40° F. at the beer outlet and the following temperatures at other points in the system: reach-in refrigerator, 36° F.; tap room storage refrigerator, 40° F.; bottle storage compartment, 40° F.

The installation includes, in addition to the Kelvinator equipment, a Temprite beverage-cooling unit capable of cooling 50 gals. of draft beer per hour. The bottle-storage compartment is refrigerated by a Kelvinator continuous fin cooling unit, 80½ in. long.

The tap room storage compartment, in which the keg beer is precooled, is 8½ ft. long, 7 ft. wide, and 7 ft. high. Containing a water-cooling coil and having a capacity of 12 half-barrels of beer, this room is served by a Kelvinator forced-convection unit.

Nela View Beer Garden Employs Servel Units

CLEVELAND—The Nela View Beer Garden on Noble Road here operated by Joe Aveni has recently been equipped with Servel refrigeration equipment for beer cooling.

Beer is dispensed from the bar on the first floor where it is cooled by a mechanically refrigerated sweet-water bath. The pre-cooler in the basement with a capacity of four half-barrels is kept at a temperature of 40° F. by a Servel Humidraft forced-convection cooling unit.

Refrigeration is supplied by a Servel model 125-AW 1½-hp. condensing unit.

Russ Bar Installed for Pottsville, Pa. Hotel

POTTSVILLE, Pa.—A Russ beer cooler and special bar have been installed in the Coal Mine Tap Room of the Necho Allen hotel here by Keystone Appliances, Inc., General Electric distributor.

In addition to a Russ instantaneous cooler with foam control, equipment installed includes two special stainless steel workboards, one for mixing cocktails and one for the preparation of sandwiches.

Pressure-Temperature Chart for Beer

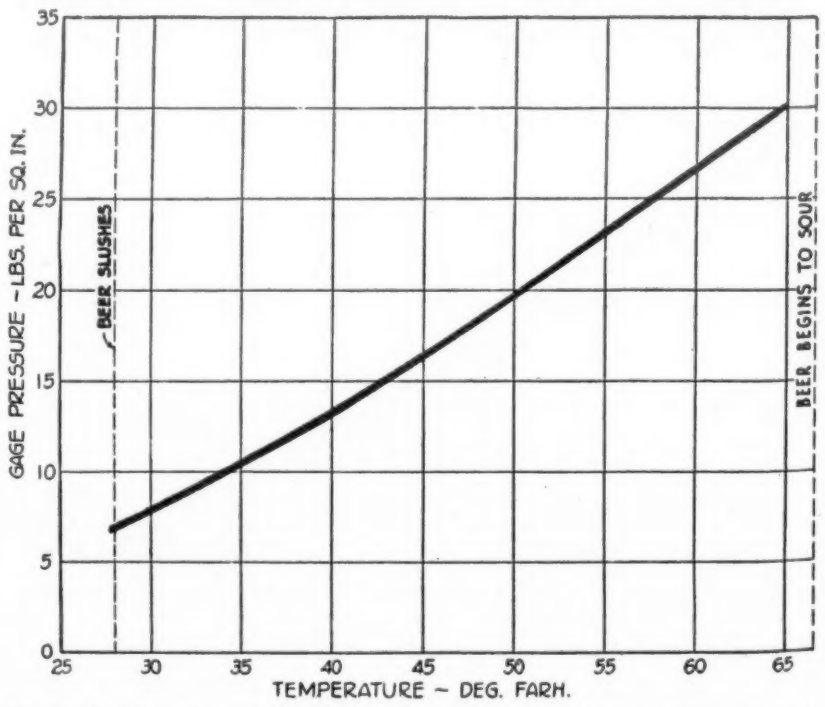


Chart showing the relationship to be preserved between pressures and temperatures of beer in order to keep sufficient carbonic gas in solution.

TEMPRITE
Instantaneous Cooling
"The leading cooler for water, beer and other beverages"
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BARE COMPRESSORS FOR ALL USES
MERCHANT & EVANS CO., Manufacturers
PHILADELPHIA, PA.

J. J. Leonard Traces Seeger's Experience In Beer Cooler Field

(*Concluded from Page 7, Column 2*)

week in December and the only unsatisfactory thing about the bar has been the fact that we never have been able to make the deliveries that were wanted by the tavern people. In other words we announced it before we had a quantity of it and all through the spring months we had considerable difficulty in keeping up shipments on the orders that were received. We went into this on a real production basis and we now will be in a position, I believe, to make prompt shipment of our all-steel bars the same as we have on our novelty boxes.

It has very frequently been said to us by the electric refrigeration people that are very prominent in the electric refrigeration manufacturing, that they were very much disappointed in the volume of beer business that went to the electric refrigeration industry. I think one of the reasons was the manner in which the electric refrigeration industry approached the breweries, you might say, tried to dictate to them what the brewery should do.

The Wrong Approach

We got to know quite a few of the breweries very well and especially the very large breweries that had millions of dollars at their disposal and we have talked to them evenings, in their homes, in the offices about electrical refrigeration and a prominent sales manager of one of the large breweries told us that he never came in contact with anybody that approached him for business in such a condescending manner, as he put it, as he had been approached by the electric refrigeration people. These he said, however, were not from the home offices or the headquarters but he said at different times that they were approached, and the impression given was that the breweries were about 50 years behind the times.

As one of the breweries told me that he doesn't know anything about electric refrigeration, he doesn't know anything about B.t.u. heat leakage but he did know something about the beer business, and possibly he knew as much about the electric refrigeration business as the electric refrigeration man knew about the beer business.

I think, however, that a great deal of that has been eliminated and if the codes had not interfered the breweries would have been heavy buyers of electric refrigeration. They are favorable to it and we are working now on some equipment, especially designed for electrical refrigeration that we expect to announce very shortly.

We did not design this equipment and go to the breweries and say this is what they should have and use high-pressure methods because we found out that the breweries resent high-pressure methods. They tell us what they want, and we will build it for them, running some tests and as I see it, we expect to be able to announce that line within the next 30 days or six weeks and it will have the entire approval of the brewing industry. They cannot, of course, make direct purchases on account of the code but they will make recommendations on this equipment.

When the time comes we will announce this in ELECTRIC REFRIGERATION NEWS, and very sorry that it cannot be announced in your beer supplement of July 11.

I appreciate this is a long rambling sort of a letter but I hope out of it you will get something of our activity in the beer-cooling field and we are very much enthused about the splendid opportunities for the electric refrigeration industry in the beer-cooling field.

J. J. LEONARD,
Sales manager.

Cleveland Club Buys G-E Equipment & Russ Coolers

CLEVELAND — Shaker Country Club here has recently been completely equipped with General Electric refrigeration for all purposes, including beer cooling.

The G-E equipment replaces an ammonia system.

For beer cooling one Russ coil box, one special keg storage cooler, and one back bar with refrigerated base have been installed.

Three storage refrigerators, one water-cooling unit, seven conditioned-air evaporators, one ice cube maker, and three condensing units complete the installation.

The sale was made by Dick Hunter of Electrical Housekeeping, Inc., Cleveland distributor.

Beer for Foreign Legion Cooled by Kelvinator

MEKNES, Morocco—Members of the French Foreign Legion on return from long desert marches quench their thirst at a Kelvinator-Temprite equipped bar in the headquarters of the Foreign Legion Third Regiment here.

The installation includes a Temprite beer cooler with a capacity of 75 gal. per hour, a ¾-hp. air-cooled Kelvinator condensing unit, and service refrigerator served by a Kelvinator combination cooling unit and ice tray.

Pierre Godquin of the Societe Anonyme Electra, Casablanca, Morocco, Kelvinator distributor, reports that when the installation was first put in operation, the local brewery celebrated the event by dispensing free three 15-gal. barrels of beer, which were drawn in rapid succession.

New Frigidaire Cooler Utilizes Counter-Flow

(*Concluded from Page 1, Column 4*)

by operating all three draft arms continuously.

The insulated coolers are intended for installation in uninsulated beer dispensers, while the uninsulated coolers are designed to replace beer coils in water baths of existing equipment, Mr. McElhinny states. The uninsulated models are also suitable for placement in the ice compartment of existing ice beer coolers.

Coils are cleaned without stopping the compressor, according to Frigidaire engineers, without adjusting or disconnecting the refrigeration system. Either hot or cold cleaning solutions may be used.

Either of the insulated models can be enclosed in the Frigidaire beer dispenser, a special cabinet finished in black porcelain with bright metal drain pan and top.

The dispenser has two or three draft arms according to the model of cooler enclosed.

The Frigidaire beer dispenser may be installed almost anywhere, beside a wall, against a pillar, in present fixtures, or in any other convenient location.

Frigidaire also has "Flowing Cold" coolers for bottled beer. They come in two sizes for 78 and 110 12-oz. bottles. The bottles rest on a shelf in a bath of water which is kept uniformly cold. Bottle compartment and lid are both insulated.

Frigidaire's beverage coolers are self-contained and portable and may be mounted on casters. They can be plugged into a light socket, making possible special service to parties in hotels and other gatherings.

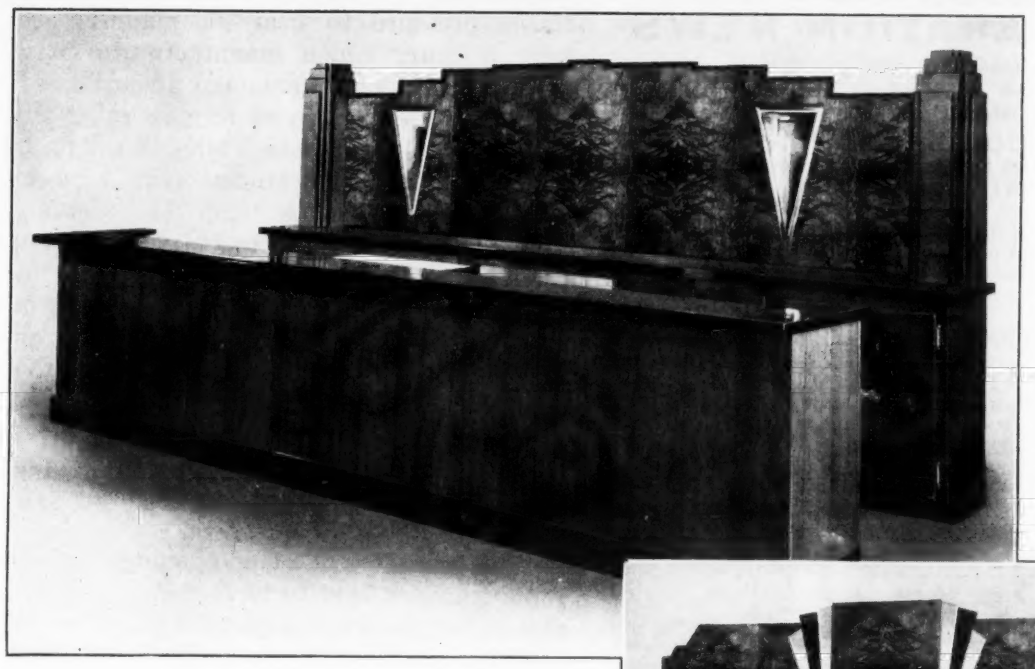
Refrigeration is produced by a two-cylinder Frigidaire compressor equipped with a ¼-hp. motor in the base of the BB-110 cooler, and by a ⅛-hp. compressor in the base of the BB-78 cooler.

* * *

Counter Flow

Beer or Water Outlets
Brass Outer Shell, Electro-tin plated
Brass Inner Shell, Electro-tin plated
Coils are tinned copper tubing,
Insulation, sealed against moisture
Refrigerant Inlet
Refrigerant Outlet
Positive action controls assure uniform beer temperatures independently of weather
Beer or Water Inlets
Galvanized Steel Outside Tank

Section of Frigidaire's new "Flowing Cold" beer cooler which may be installed in bars or used in the Frigidaire beer dispenser.



NEW ALL-STEEL
SERVICE BARS
By
Seeger
SAINT PAUL

Seeger presents an opportunity to Dealers and Distributors of Electrical Refrigeration for increased sales and larger profits, in the sale of the New Line of All-Steel Service Bars—strictly modern in design, beauty, and utility.

These New Seeger All-Steel Service Bars with sectional construction have many advantages—strength, rigidity and sanitation. They are vermin-proof and absolutely impervious to moisture and climatic conditions.

The Front Bar, beautiful "ribbon type" grain all-steel panels—new sectional construction, joined by cleverly designed scribing pieces with concealed bolts. The Bar is finished with a New Style bar top, and a black porcelain "kick-plate" at the floor.

The Work Table under the front bar, which, because of the sectional type of construction, provides an almost unlimited number of practical and convenient arrangements.

The Back Bar is a marvel of beauty—the high back section constructed of panels of rich French Butt Walnut, grained on steel plates—divided by strips of chromium, and jointed at each end to splendidly shaped steel columns of black and ribbon grained walnut. Modernistic shaped mirrors of heavy bevelled plate (at slight additional cost) complete a most artistic bar.

The lower section of the Back Bar is a combination of steel cabinets and drawers—and a four foot center electric lighted step display.

Seeger All-Steel Service Bars come in standard lengths from 8 ft. to 20 ft. or special lengths may be had for special requirements. Seeger sectional construction offers an unlimited selection of sizes and arrangements.

Write for Literature to

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SAINT PAUL, MINNESOTA

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ELECTRIC REFRIGERATION NEWS

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The TVA Situation

LAST fall the sales manager of one of the leading refrigerator manufacturers told the editor of ELECTRIC REFRIGERATION NEWS about a new low-priced refrigerator he planned to market in 1934. In effect, it was to be something similar to the chest-type TVA models now being offered by General Electric, Frigidaire, and Kelvinator. The price was to be $75. And this sales manager thought that with so low a price he could tap a new, vast small-income market.

But that refrigerator never materialized. The sales manager couldn't sell it to his distributors and dealers. The unit figure of $75 was too small to interest them, especially with the lesser margins which that price made necessary. Came the announcement of the TVA program, and a renewed interest on the part of the manufacturer in getting this model out into the field. But the distributors still turned thumbs down on it. So now, like several other manufacturers, this company will not be represented this season with a TVA model.

Manufacturers who have gone ahead and sprung their TVA models are also finding resistance to these $77.50 jobs among their dealers. One manufacturer reports that only a few hundred of these models have been ordered thus far, and that only a comparatively few of these have gone into the Tennessee Valley!

The simple truth of the situation seems to be that nobody wants to sell these models—at least, not on present margins. A distributor who finds a difference of only eight dollars or so between the amount he pays the manufacturer and the price at which he sells to the dealer is left with just about enough to cover freight and handling charges. He's in business for profits, and can't be expected to get hepped up over an altruistic program when it means that he's simply in business for his health as far as these refrigerators are concerned.

As a result, dealer and distributor unrest in the TVA territory has been fomenting steadily since the announcement of the TVA models. Dealers have held mass meetings in protest, have drawn up resolutions of censure and sent them to the TVA Authority, and have petitioned their manufacturers to "do something about the situation." Atlanta dealers and distributors even sought an injunction to prevent the Georgia Power Co. from selling TVA appliances.

The position of the utilities now serving the Tennessee Valley (Georgia Power and Commonwealth & Southern) is indeed embarrassing to the regular electric refrigeration dealer body down there. The dealers, it would seem, not only don't want to push these TVA models, but don't want the utilities to push them, either. Yet the utilities have embarked on a five-year program to put millions of dollars' worth of appliances on their lines, and they mean to play these TVA models for all they're worth.

As a matter of fact, these public utilities are said to have been highly influential in persuading manufacturers to put out electric refrigerators to retail for less than $80. Even when governmental authorities were insisting that $50 should be the price for an electric refrigerator, utility men were strongly behind TVA Director David E. Lilienthal, and were bringing considerable pressure to bear on manufacturers to meet a figure which manufacturers considered both highly unreasonable and absurd.

With the government forcing rates for electricity in the Tennessee Valley down to a point which the central stations claim is a money-losing proposition for them (the forcing was effected by threatening to build duplicate power transmission systems alongside those of the utilities and offering direct competition in electrical service) Georgia Power and the Commonwealth & Southern properties found that the best solution to their difficulties lay in building a tremendous additional load for their lines. Hence, they want low-priced appliances, and they aren't terribly concerned whether they can retail them at a profit or not.

The chest type (top-opening) of electric refrigerator is said to have been kicking around factory engineering departments for some time, awaiting a propitious moment for its introduction. And it has its points. For instance, more food can be stored in a top-opener than in a side-opener, because food can be stacked in the former without fear of its falling out when the door is opened. It can be built at smaller cost than other current models. And it can be operated more economically. Heat rises, cold stays low; when the lid of a top-opener is lifted to remove food, very little cold escapes (or correctly, little heat enters). On the other hand, the opening of the door on conventional types of refrigerators lets heat in and adds materially to the load on the machine.

But sales have been so remarkably good this year, and prospects for 1935 so encouraging, there seemed to be no cause to bring out an especially low-priced job to force business. Prices, in fact, were going up. Hence, had it not been for Director Lilienthal's insistence that the industry turn the attention of its engineers toward the design of a "radically different" refrigerator, there seems to be little likelihood that the top-opener would have been forthcoming in 1934 or 1935.

Whether or not the TVA models will interfere with the sale of higher-priced models remains to be seen. Manufacturers think they won't. It's their belief that there is enough difference between the top-openers and other lines that anyone who can afford to pay a dollar a week (or less) additional will be glad to do it. Dealers aren't so sure, and point to the number of former Packard owners who are now driving Fords. Time conceals the answer.

Dealers down South are arguing that the best protection for dealers and distributors who want to sell TVA models and yet stay in business is to figure out a schedule of minimum margins and obtain their approval from the Tennessee Valley Authority. Minimum margins do not constitute price-fixing, they aver, and should be acceptable to reasonable-minded government officials. If they fail to obtain such a schedule, dealers say, they will feel that they are being legislated out of business.

At present nobody in the industry seems to be very happy about TVA. Utilities don't like it because they now have, for the first time, a real competitor. Distributors are displeased because they think they have been forced into a profitless business. Dealers are disturbed because they think the old bugaboo of competition from utilities merchandising appliances below cost is again with them. And manufacturers say that they have had to spend more time working with the government than they have been able to put in promoting their own business.

Just why the government thinks it necessary to attempt to teach the refrigeration industry—one of the most signally successful distributing groups in the nation—a lesson in distribution at this time isn't quite clear; unless it is because the New Dealers find they have a mighty big bear by the tail in the TVA project, and must get a better grip on the situation if they are to keep it in hand.

After taking this industry by the hand and showing it how to sell electric refrigerators, we look for some bright bureaucrat to undertake the task of informing Ford, Chevrolet, and Plymouth how to make low-priced cars. Then there should be a wide-open opportunity for the brain trust to teach Bobby Jones how to play golf.

LETTERS

West Coast Wholesaler Seeks New Lines

Bonded Refrigeration Sales and Service Co.
237 N. Vermont Ave., Los Angeles
June 26, 1934.

Editor:

Enclosed find our check for one year's subscription to the ELECTRIC REFRIGERATION NEWS.

We have been in business here for about three years and although the company has never taken your paper, several of our employes have.

We conduct a wholesale business and cover the entire Pacific Coast and know every dealer, distributor, and manufacturer in the territory. We also have another division of the company which maintains a service organization and are pleased to state we do a very nice service business even under these trying times.

You are always in contact with various manufacturers who are looking for representation on the coast and we would be very much pleased if you would have them get in touch with us or let us know who they are so that we can write to them at once.

E. W. ESMAN,
Manager, wholesale division.

The EH&FA Requests Statistical Data

Electric Home and Farm Authority, Inc.
An Agency of the Tennessee Valley Authority
Chattanooga, Tennessee
July 2, 1934.

Editor:

I have been informed that you prepare a monthly report of refrigerators sold in certain sections, as well as nationally.

It would be of great assistance to us in planning our cooperative efforts in the Tennessee Valley Authority if copies of these reports could be forwarded to us. At the same time, I would appreciate receiving similar reports for 1933, if they are available.

Of course you will understand that we are particularly interested at this time in sales made in the Tennessee Valley.

G. D. MUNGER,
Commercial Manager.

Answer: All available statistics regarding sales of refrigeration equipment are published in the weekly issues of ELECTRIC REFRIGERATION NEWS. This includes detailed tabulations of sales of all classes of equipment by the member companies of National Electrical Manufacturers' Association (Nema). The total sales of these companies represent in the neighborhood of 85 per cent of the entire industry as far as household refrigeration sales are concerned. The figures for individual companies are not given.

Other data published regularly includes estimates of sales by states as compiled by the Electric Refrigeration Bureau of the Edison Institute, exports as reported by the Bureau of Foreign and Domestic Commerce and various miscellaneous data.

All figures, again in detail, up to Jan. 1, 1934 will be found in the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

P.S.—We are sending sample copy of June 6, 1934 issue. Note statistical page.

A Calcutta 'Museum' Wants Copies for File

Swadeshi Commercial Museum
Albert Hall, College Sq.
Calcutta, India
June 7, 1934.

Editor:

I am desired by the executive committee of this museum to make a request to you.

This museum was established two years ago with the object of bringing buyers and sellers together. It has been very successful in doing so. It is visited every day by hundreds of business men and has at present exhibits of 272 manufacturers.

We have recently opened a library and a reading room. As our funds are limited, we are unable to subscribe to your valuable journal. I am desired by the committee to request you to put this museum on your complimentary mailing list to receive a copy of your paper regularly.

The current issues of your paper will be placed in our reading room and later will be carefully filed and every six months, they will be bound and placed in our library to act as a reference book for the future.

As your paper will be read every month by a large number of business men in this country, it will help to bring new buyers from India for your advertisers—a step which, we believe, they will appreciate.

We shall be deeply grateful to you for your assistance in this matter.

R. K. KHEMKA,
Secretary, museum committee.

Meaning of 'Value' In Nema Figures

Old Colony Sales Corp.
276 Union St., New Bedford, Mass.
July 3, 1934.

Editor:

In your issue of ELECTRIC REFRIGERATION NEWS of June 6, various statistics are given covering sales of household refrigerators for the first four months of 1934.

These figures would be of more use in many ways, if the column "Value" were more closely defined. Is this the value set upon it by the manufacturer, the wholesaler's value, or the retailer's value? We think this column would be of more interest if it were the "Retail Selling Price."

In any case, will you please let us know exactly what "Value" as used in this case means.

CARL A. GODDARD.
Manager.

Answer: Value figures shown in the statistics compiled by the Refrigeration Division of the National Electrical Manufacturers Association represent factory prices at which sales are billed to distributors and dealers. Value of sales at retail prices is not given.

The News Gets Credit For Two Sales

Sander & Recker Furniture Co.
Indianapolis
July 6, 1934.

Editor:

The writer has been an interested reader of your paper for years and thinks that the information it contains is of vital interest to every sales person in the refrigeration business. It has been particularly a great help to me in the past 60 days.

As you know the Norge Corp. has been running a grand cash prize contest, May 1 to June 30, inclusive. During this time I sold 16 Norge electric refrigerators for a total of 26¾ points.

Two of these sales I attribute directly to valuable information assimilated from the pages of your paper. These two sales would probably have gone to a competitor if I had not been a reader of ELECTRIC REFRIGERATION NEWS.

A. J. BOWDEN.

Words of Praise from A Kelvinator Booster

Kelvinator Sales Corp.
620 Memorial Drive
Cambridge, Mass.
July 6, 1934.

Editor:

I just couldn't go home today without passing my comment of praise to you for "them few kind words" in behalf of Kelvinator which I find in your personal column on the July 4 edition. Thanks lots: Its about time you gave us a break! What say? And I'm so glad you feel the same way about Johnny Garceau that I do; he sure is a marvel the way he keeps going, physically and mentally.

You know I follow your personal column just as faithfully as I do Walter Winchell's. Really! And a little thrill runs up and down my spine every so often when you mention Jud Sayre! You see I worked for Jud for several years so I, too, know how fine he really is.

And that Kelvinator marionette show! Isn't that a clever sales promotion piece of work? It was just ready in January when I was out to Detroit, so I hiked my way over to Toledo to see it—and I've always felt it was worth it. Wish we could have had it in Boston, but pecuniary matters prevented it.

M. S. SCOTT.

Going About It In the Right Way

Law Offices of
Alfred A. Van Hovenberg
4001 San Leandro St.
Oakland, Calif.
July 3, 1934.

Editor:

A client of mine is about to enter into the business of manufacturing and vending electric refrigerators.

Kindly furnish me with information regarding the code, etc., regulating or in any way affecting that business.

Also send me subscription rates, etc., for your publications as we shall desire to subscribe for the same, for I appreciate the fact that we should keep posted on current events relating to our business. Thanking you in advance.

ALFRED A. VAN HOVENBERG.

A Note of Appreciation From South America

RCA Victor Argentina
Buenos Aires, Argentine Republic

Editor:

I look forward eagerly for the arrival of each issue of ELECTRIC REFRIGERATION NEWS here.

W. J. JUSTICE,
Manager, Kelvinator division.

District Managers For Leonard Confer On Promotion Plans

CHICAGO—Leonard district managers from all parts of the country met here July 1 at the Palmer House to discuss the merchandising plans that are to feature Leonard Refrigerator Co.'s advertising and selling program during the remainder of the year.

Godfrey Strelinger, Leonard sales manager, presided. The company's summer campaign, new advertising, publicity activities and World's Fair exhibit were surveyed by Advertising Manager Sam C. Mitchell. Details of the summer sales contests were reviewed by Walter Jeffrey of the sales promotion department.

The district managers were given a pre-view of Leonard's latest sound film, "Your Undelivered Purchase," a selling movie for retail men. Paul D. Sowell of the sales promotion and advertising department addressed the group on the universally favorable results that have followed the use of such films, and commented on the parts these showings will play in the company's activities during the remainder of the fiscal year.

Leonard district managers present included J. B. Nicholson, Los Angeles; R. W. Jones, Denver; Lee Stratton, Cincinnati; G. E. Rogo, New York; B. T. Roe, Philadelphia; S. D. Camper, Detroit; B. E. White, Atlanta; and George B. Gray, Houston. Miles Ewing, Chicago, was prevented from attending by illness.

Assistant Sales Manager R. R. Ludington; R. G. Nelson of the Leonard sales department, and J. J. O'Neil of the department store division also were present at the meeting.

Frigidaire Spring Sales Show 45% Increase

NEW YORK CITY—Household refrigerator sales volume of Frigidaire Corp. was 45 per cent greater in March, April and May than in any similar three-month period in the history of the company, E. G. Biechler, president and general manager, announced here June 22.

The company's two plants in Dayton are operating on a peak production basis. Sales gains have been made in every one of the company's 44 distributing districts, he said, and added that, sales of equipment to apartment house operators and retail food establishments have risen.

G-E Kitchen Designers Compete in Contest

CLEVELAND — Kitchen designers working for General Electric distributors will enter competition for the best design of a kitchen which is being sponsored by the Kitchen Planning division of the G-E Specialty Appliance Sales department.

First prize in the competition will be $20, second $15, and three mentions each of $5.

The "problem" in the competition will be an actual sketch submitted by the client, worked out in the best arrangement for a complete kitchen.

Drawings must be at the G-E Kitchen Institute at Nela Park not later than July 23 and the jury of award meet July 26, according to Victor Civkin, professional advisor to the Kitchen Planning division.

Norge Cooking Schools Draw 10,000 Women

DETROIT—During the past few months, Norge Corp. home economists have conducted cold cookery schools in nearly 100 cities before approximately 10,000 women, with individual audiences ranging from 15 to 2,000 women.

Typical of the results reported from such activity is experience of the Bolckman Furniture Co., Clinton, Iowa, dealer. A Norge home service demonstration in its store was attended by 90 women, resulting in eight direct sales and 50 good prospects.

Dealer Rewards Prospects Reading Advertisement

COLUMBIA, Mo.—Stewart's, Inc., Norge dealer here, recently ran an advertisement about an advertisement. It appeared in a local paper, and read:

"Up to $19.50 for reading an ad . . .

"To every woman in Columbia and Boone county who will take time to read the Norge advertisement of the Kansas City Power & Light Co. in yesterday's *Kansas City Star*, we will allow 5 per cent cash discount on any and all merchandise purchased from us during the next two weeks.

"If you ever think of buying a refrigerator, you should read this ad. We will also pay 10 cents for each of the first 25 clean copies of said ad delivered to our store."

"...oh, yeah? Well listen.... one of the best thinqs my boys have to talk about is Dry-Zero insulation. It costs 60% less to run than that cheap job of yours."

Dry-Zero offers *one* of the best selling points any salesman of a Dry-Zero insulated job can use. It is the chief reason why a low temperature can be maintained in the box with a minimum consumption of current. Dry-Zero assures economical operation for the life of the refrigerator. If you want the complete story of Dry-Zero insulation, write for "What is Dry-Zero."

DRY·ZERO
REG. U.S. PAT. OFF.
THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN

Dry·Zero Corporation • CHICAGO Merchandise Mart • TORONTO 687 Broadview Ave.

STATISTICS

Survey Shows 344,940 Household Mechanical Refrigerators in Use By All New York City Families

New York Times Issues Data Compiled by R. L. Polk Co.

Estimated Number of Leading Makes Now in Use

Frigidaire	5.73%	103,320
Electrolux	5.65%	101,900
General Electric	3.63%	65,360
Kelvinator	1.49%	26,920
Miscellaneous	2.63%	47,440
No mechanical refrigerator	80.87%	1,458,360

NEW YORK CITY—Distribution by brand and age in years of the nearly 345,000 mechanical household refrigerators owned by New York City families is made available for the first time in the Consumer Census of the New York City market made by R. L. Polk & Co., Detroit, and released by the *New York Times*.

An exhaustive study of nearly 90,000 New York family groups by trained enumerators made it possible to accumulate a wealth of data of interest to executives, sales managers, and advertising men. Tests indicate that this number of interviews is sufficient to give an accurate index of the city as a whole.

The Consumer Census is the most intensive and ambitious of a series of similar surveys conducted throughout the United States. Rights to use the figures were purchased by the *Times* after completion of the survey.

Among the information available is data covering nativity of family, home ownership, rent paid, and ownership of such merchandise as mechanical refrigerators, vacuum cleaners, electric washers, automobiles, radios, telephones, and pianos. Prices paid for wearing apparel by men and women, and their brand preferences for foodstuffs and sundries are also indicated by the census.

The following tabulation shows the age of mechanical refrigerators owned by families in New York City:

Age of Mechanical Refrigerators Owned by New York City Families

Under 1 year	142,920
1—2 years	83,660
2—3 years	57,140
3—4 years	31,620
Over 4 years	29,600
Total	344,940

Thus about 65 per cent of the refrigerators now in use in New York City were purchased within the past two years, and about 41 per cent were purchased during the past year.

According to the Consumer Census 19.13 per cent of all New York City families now have mechanical refrigerators. Ownership by make is shown in the table above.

Percentage of all New York City families which bought mechanical refrigerators and other household appliances within the past two years and ownership of various articles of merchandise and services were published in the July 4 issue of ELECTRIC REFRIGERATION NEWS.

McCORD
REFRIGERATION
PRODUCTS

COMMERCIAL EVAPORATORS

DOMESTIC EVAPORATORS

CONDENSERS

METLFLEX ICE TRAYS

SPIRAL FINNED TUBING

SPIRAL COPPER FINNED IRON, STEEL OR COPPER PIPE

McCORD RADIATOR & MFG. CO.
DETROIT. -:- MICH.

Leonard Shipments in May Set New Record

DETROIT—Leonard Refrigerator Co. established a new all-time shipping record for that organization during May, officials of the company have announced. Shipments reached a mark higher than that for any previous month in the company's history, and broke the May, 1933, record by 42.3 per cent.

Leonard's shipments for its current fiscal year's first eight months, concluded May 31, were 68.3 per cent greater than for the corresponding period last year, it was stated.

Power Co. Sells 2,427 Units in 6 Weeks

ATLANTA—During the first six weeks of its annual refrigeration sales campaign Georgia Power Co. has sold 2,427 household refrigerators, $20,454 worth of commercial refrigeration equipment, and 58 electrically refrigerated water coolers.

At the end of the six weeks, these totals left the power company 7/10 of 1 per cent behind the quota set for that period of the campaign.

Rex Cole Opens New Retail Showroom

NEW YORK CITY—A new showroom has just been opened on the main floor of the General Electric building at 570 Lexington Ave. here by Rex Cole, Inc., General Electric distributor. Wright Griffin is in charge of the salesroom.

Burt Strouse, retail salesman, made the first sale in the new quarters before they were opened to the public. He sold a vacuum cleaner to a workman who was doing some paint work there.

Burns Named to Manage Eureka's Toronto Office

TORONTO, Canada — Charles W. Burns, formerly merchandising manager of the Walkerville Hydro Electric System, has joined the Eureka Refrigerator Co., Ltd., manufacturer of commercial refrigerators, as manager of its Toronto office.

Mr. Burns was also at one time Toronto manager of the Canadian Edison Appliance Co., which since has been absorbed by the Canadian General Electric Co., Ltd.

Editorial Features Scheduled for Coming Issues

July 18 . . . . . Water Cooling

July 25 . . . . Air Conditioning

Business News Publishing Co. Makes Cash Rebate To Refrigerated Food News Subscribers

Also a Special Offer, but Counter-Offers from Subscribers Involve Difficulties

Depression Medicine

When the crash came in the Fall of 1929, F. M. Cockrell, publisher of ELECTRIC REFRIGERATION NEWS, had a lot of ideas to meet the situation. He had been through depressions before. His principal formulas were: "Do something different." "If old business fades away, look for new business where you haven't been getting it."

Acting on the theory, he immediately started several new activities. The NEWS blossomed out with a pink section, a green section, and a yellow section. New editors were added to the staff—young men who had good feet and no heavy waistlines. Briefly, the NEWS moved faster and covered more territory.

Work was started on the DIRECTORY and the yellow section became a separate publication. It was christened Refrigerated Food News and was issued monthly.

We had hopes that it would become a strong paper like ELECTRIC REFRIGERATION NEWS but it never seemed to grow up. A few thousand subscribers were enrolled but never enough to make a profitable enterprise. So the first of this year it was decided to return it to the fold of ELECTRIC REFRIGERATION NEWS. Last month Mr. Cockrell sent the following letter to the Food News subscribers:

A 'Pay-Off' Without Aid of the R.F.C.

Business News Publishing Co.
5229 Cass Ave., Detroit, Mich.

Subject: Refrigerated Food News Subscription Rebate.

Dear Subscriber:

Enclosed find the rebate due you because of the suspension of Refrigerated Food News. We are pleased to state that this "pay-off" is being made without assistance from the RFC or any of the other alphabetic agencies of the government. We must apologize, however, for the delay. In the matter of time required to perform this operation, we have not done much better than the average closed bank.

We have a lot of excuses to offer which may, or may not, interest you. First, it was not until the end of January that we finally decided to abandon Refrigerated Food News as a separate publication and adopt the plan of incorporating all commercial refrigeration and food preservation information in the regular weekly issues of ELECTRIC REFRIGERATION NEWS.

About that time we started moving our offices from the Maccabees Bldg. to our new home at 5229 Cass Ave. In order to make the transfer without interrupting publishing schedules it was necessary to move a few people with their equipment at a time, thereby spreading the job over several weeks.

Another reason for the delay, which may sound silly to you, was really important. It took us a long time to build up a dependable subscription record system with adequate facilities for handling incoming orders, remittances, changes of address, etc. Nowadays, it is seldom indeed that a subscriber complains about any inaccuracy in our records. But here is the funny part: While we had a good system for *collecting* subscription money, we had made no provision whatever for *paying it back*. And you might be surprised to know what a complicated job it was to figure out the exact rebate due each one of the hundreds of subscribers.

May we thank you for your interest in Refrigerated Food News and your patience in waiting for us to make this adjustment. Please be sure to note the *special offer* on the enclosed "remittance advice."

F. M. COCKRELL,
President.

'Double Value' Offered To Check Holders

Postage stamps were used to rebate amounts less than 25 cents. The following special offer was enclosed with checks for amounts from 25 cents to $1.50:

"Since the subscription rate for Refrigerated Food News was only $1.00 per year (three years for $2.00) a large percentage of these rebate checks are for amounts less than $1.00. If all of these checks are cashed in the regular manner, we anticipate a complaint from our bank because of this excessive demand for checking service. Therefore, in order to reduce the number of these bank transactions to a minimum, we are making you the following offer:

"This check will have *double value* if returned to us *uncashed* and used as part-payment on the purchase of a 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK (price $3.00 per copy, postpaid).

"Please understand, of course, that it is your privilege to cash the check if you desire."

While a "special offer" has its appeal to many people and often brings good results in the form of orders, it often brings complications in the form of requests for variations from the plan proposed. Following are some samples:

Subscriber No. 1 for 1935 Directory

Kold-Hold Mfg. Co.
Olds Tower Building, Lansing, Mich.

Editor:

Your apology of June 18 duly received and reluctantly accepted.

While your generous offer on your Remittance Advice, indicates that your check would have double value if returned and used as part payment on the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK, you apparently have overlooked the poor devils like ourselves that have already purchased a copy of the same and therefore, if it will not be out of order, we are returning herewith, your check with request that same be accepted as part payment of the purchase of a 1935 REFRIGERATION DIRECTORY AND MARKET DATA BOOK. So possibly we may head the subscription list for your 1935 issue and if so, presume you will want to consider same as an *Extra Special Offer*. However, if this is inconsistent and not agreeable with your policy, please return the check to us, but our order for a copy of the 1935 REFRIGERATION DIRECTORY stands for we do not believe that any organization can afford to be without it.

W. G. FARNSWORTH,
General manager.

Answer: We are flabbergasted by your reference to *"poor devils"* who have already purchased a copy of the DIRECTORY. We rate early buyers of this book as shrewd business men. Furthermore, we believe that an important concern, such as your company, could easily use *two* or more DIRECTORIES to good advantage.

We are delighted to enter your order for the 1935 edition and hereby proclaim you as No. 1 Subscriber. Considering the fearful intricacies of bookkeeping, however, we venture to make two guesses regarding the outcome of this ambitious idea:

(*Guess No. 1*) Our marvelous system will work and you will receive an invoice for the balance due, after deducting your rebate of 56 cents and the extra allowance of 56 cents. Your bookkeeping department will not understand the bill, having forgotten all about the incident, and will promptly write back to find out the meaning of the odd amount.

(*Guess No. 2*) We will forget to inform the operator about this credit when she makes out the invoice for your 1935 book and she will bill you for the full amount. You will then write us an indignant letter calling attention to the error.

Face Value Only for News Subscription

M. A. Purvin & Co.
Monadnock Block, Chicago, Ill.

Editor:

We have your letter of June 18, together with your check No. 1357 covering rebate for the unfilled portion subscription of the Refrigerated Food News.

We want to know, before cashing said check, whether you would be willing to give us credit for same, if we applied said check towards an additional subscription, after our present one expires, for ELECTRIC REFRIGERATION NEWS.

Maybe, our check will have double value on this basis, also.

G. H. EMIN.

Answer: We do not like to turn down a subscription but it complicates matters terribly to handle a subscription for an irregular term. Every subscription has to be recorded and classified about 17 different ways in order to keep the records which are necessary for our own purposes as well as those demanded by the Audit Bureau of Circulations. In order to extend a subscription a few weeks, it is necessary to correct all of these records. We have a very complete system and some very rapid mechanical equipment to handle regular subscription orders. If we had to handle every one as a special job, the cost would be prohibitive.

We will be glad to apply your check as a credit on the next renewal of your subscription at *face value*. The double offer applies only to the DIRECTORY.

Now Things Are Getting Complicated

Alfol Insulation Co., Inc.
Chrysler Bldg., New York City

Editor:

We wish to thank you for your rebate check for 69 cents.

We note that you want to avoid having these checks cashed in the regular manner.

You recently refused to allow us a discount on a bill for advertising, which seems to us entirely unreasonable. We would appreciate it if you would use this check and cancel the charge you have made us for cash discount not allowed.

CHANNING TURNER,
Office manager.

Answer: Now things are getting complicated. We allow a 2 per cent cash discount on advertising bills if paid within two weeks from date of issue. If not paid within that time, of course, the discount is not due. It seems to us that a cash discount is made obviously for the purpose of encouraging prompt remittance, thus reducing the amount of working capital needed to operate a business. If discounts are allowed *after* the specified time then the purpose is defeated. Or, if the discount is allowed to some customers and not to others, it becomes an unfair practice.

Won't you please cash the check. Let's keep the records straight.

These Patent Fellers also Have a Lot of Ideas

Kelvinator Corp.
14250 Plymouth Rd., Detroit

Editor:

With reference to the above, our check has already been forwarded to cover the DIRECTORY and NEWS. Please apply this check as stated above, if possible, and remit balance to us.

PATENT DEPT.

Answer: Please have a heart. Keeping subscription records is complicated enough as it is. Don't ask us to open up an old account and do it all over again. We sent you a check to pay our debt in full. You're asking us to send you a new check for double that amount.

No 'Redoubling' on Special Offers

Engineering Co. of Philadelphia
2222 Arch St., Philadelphia, Pa.

Editor:

We have received your check of $.50 covering the rebate on Refrigerated Food News.

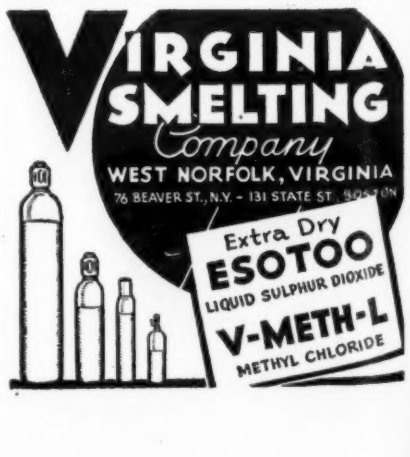
It is less than two weeks since we subscribed to the DIRECTORY and renewed our subscription to the ELECTRIC REFRIGERATION NEWS. We have not received a bill and we would like to know whether we may apply the check at double value, in accordance with your offer on this bill.

A. H. HOLCOMBE, JR.

Answer: Our offer was that we would accept a rebate check at double value as part-payment on a DIRECTORY at $3.00 per copy. Since your rebate check amounts to 50 cents, you would be entitled to a credit of $1.00, making the DIRECTORY cost you $2.00.

You have, however, already taken advantage of *another special offer* which gives you a saving of $1.00 on the price of the book (the $5.00 combination rate for DIRECTORY and NEWS subscription). Obviously a subscriber cannot take advantage of the saving offered on *two* or more combinations in making a purchase of only *one* book.

We are returning your check which you can apply according to the offer on the purchase of a second copy of the DIRECTORY or you may cash the check.



ENGINEERING

How Westinghouse Tests Units For Operating Performance

By G. E. Coyle, East Springfield Works, Westinghouse Electric & Mfg. Co.

GOOD appearance in a refrigerator impresses the housewife most, whereas the first question that enters a man's mind is, "How will it perform, and how much will it cost per month to run it?" After a refrigerator is installed, these two questions come to the forefront and have to be answered satisfactorily to keep and to gain new customers. To answer these two questions, Westinghouse engineers have devised a series of tests designed to test the performance of the icing unit and the economy of that performance.

The compressor, consisting of motor frame, rotor, shaft, cylinder and piston, is first tested. The permanent stator is not used on this test; but a "dummy" or test stator is pressed into the frame and supplies the power. This precludes any possibility of oil, dust, or moisture contaminating the permanent stator in any way.

Running In Compressors

The unit is then placed in a trough containing oil and run in for six hours. This "run-in" gives the unit a thorough washing, cleaning off the whole compressor and bringing the pump up to normal operating condition and temperature.

The compressor is then tested, being supported on a spring mounting in a test shell which duplicates permanent mounting—for noise, friction of rotating parts, and pumping efficiency.

The pumping time, or the ability of the unit to refrigerate, is measured with the unit pumping against a head pressure of 100 lbs. per sq. in. The vacuum that the pump will pull is also measured with the discharge pressure at 100 lbs. per sq. in., which gives a very good indication of the valve action.

The volumetric efficiency of the pump is measured with a "Rotameter," a tapered tube in which a light rotating "top" floats on the stream of air, making an absolute frictionless meter giving consistent results.

The Rotameter is very sensitive to changes in flow and shows up any erratic action on the part of the pump or valves. One second below the limit for pumping time disqualifies a unit, and it has to go back for reassembly and re-test.

After the pump test, the "test" stator is pressed out and is now ready to be used again on another compressor going to "run in." The compressor is washed and dried, after which the permanent stator, previously stored in a paper bag, is now pressed in, and the unloader is assembled.

The unit is now ready for another noise test and for a torque test. Also, friction is again checked to see that the pressing in of the permanent stator has not disturbed the line-up in any way.

Dynamometer Test

The compressor is coupled up to a dynamometer where starting torque and current, break-down or maximum pulling torque are measured, friction and windage again read. The air gap is also checked with a feeler gauge, and the unloader and unit have to pass a noise test, as well as a high voltage insulation test.

The compressor is now pressed into its shell, and icing unit assembly follows, in which all joints, welded and silver-soldered, are tested with a pressure of 200 lbs. per sq. in. of air. The unit is then dried for 12 hours in an oven heated over 125° C. and in which air is used that does not show a dew point until the temperature has dropped to —60° to —70° F.

After being taken from the oven, the unit is evacuated to almost a perfect vacuum and then charged with oil and refrigerant.

The unit is then run for six hours and a moisture test is taken to be sure that the unit, refrigerant, and oil are not contaminated with moisture, which would cause corrosion of valves and bearings. The amount of moisture allowed (proportion of weight of moisture to weight of refrigerant) is .006 per cent, which limit precludes any possibility of corrosion or decomposition of the refrigerant in the unit.

Performance Test

The icing unit is now ready for its final performance test. Each unit is mounted with the evaporator or froster enclosed in an insulated cabinet designed to duplicate heat leakage of an actual refrigerator cabinet.

The unit is then run into a heated room which is kept at a temperature of 100 to 110° F., and the ability of the unit to start on under and over-voltage is tested. The unit is then run eight hours at No. 1, the coldest position of the control.

This first run shows up any condition of over and under-charge and general running condition. The unit is then connected up to a recording vacuum and pressure gauge, connected to the suction side of the unit.

A complete graphic record of both the unit and its control is shown on the chart. The various positions of the control are used, and the chart shows the actual time required to pull down to a definite suction pressure and temperature.

The watts input is also measured at this point, as well as the head pressure and the operation of the unloader. This gives a complete record of each unit, how much it will cost to run, how long it takes to pull down to temperature, and in every way duplicates the most severe conditions in service.

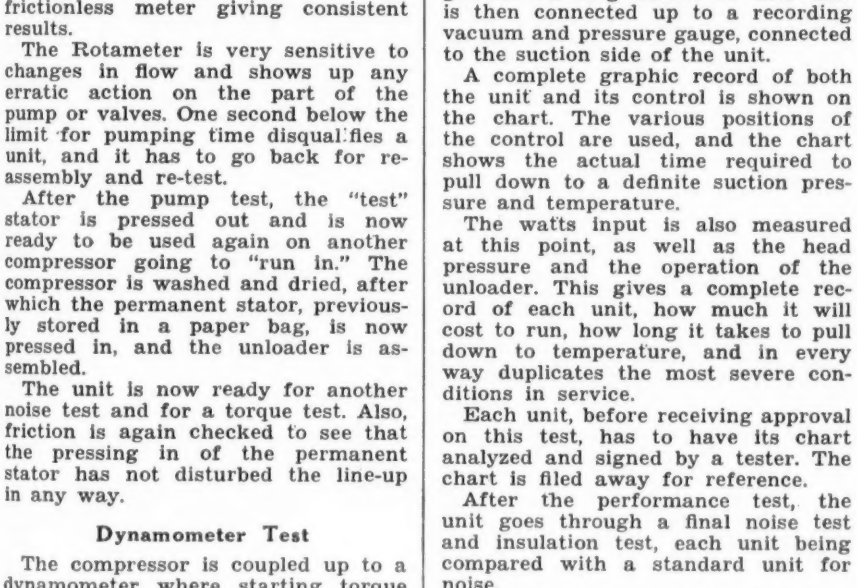
Each unit, before receiving approval on this test, has to have its chart analyzed and signed by a tester. The chart is filed away for reference.

After the performance test, the unit goes through a final noise test and insulation test, each unit being compared with a standard unit for noise.

The unit is then sealed off, painted, and a final test of all joints is made by placing each unit under a glass hood into which anhydrous ammonia gas is injected, surrounding the unit, and showing up any leaks of refrigerant by a white vapor.

Finally, the freezing trays and instructions are supplied with each unit and a rigid final inspection is made, after which the unit is ready for shipment.

Piping Diagram of Compressor Test



Test set-up devised by Westinghouse to determine operating performance of household refrigeration compressors (see description above).

Specifications of Coldspot Household Refrigerators

Sears, Roebuck & Co., Chicago, Ill.				
Model No.	940-C	860-C	660-CP	670-CP
Cabinet Specifications				
Overall dimensions (in.)				
Height	51¼	58¼	58¼	58¼
Width	23⅜	30	30	33⅝
Depth	22⅞	24⅞	24⅞	25⅞
Inside dimensions of liner (in.)				
Height	27½	32	32	32
Width	19½	23⅝	23⅝	27¼
Depth	15	15¾	15¾	16¾
Storage Capacity				
Gross food storage (cu. ft.)	4.65	6.90	6.90	8.46
Net food storage (cu. ft.)	4.00	6.20	6.20	7.55
No. of shelves	3	4	4	4
Total shelf area (sq. ft.)	9.10	12.63	12.63	15.90
Ice Cube Trays				
No. of trays	2	3	3	4
No. of ice cubes produced	56	84	84	112
Weight of ice cubes (lbs.)	4	6	6	8
Thickness of Insulation (in.)				
Top	2½	2½	2½	2½
Sides	3	3	3	3
Bottom	3	3	3	3
Compressor Specifications				
Capacity (lbs.) I.M.E. in 90° room, with 20° evaporator	120	120	120	150
Motor size (hp.)	⅙	⅙	⅙	⅕
Compressor speed (r.p.m.)	1725	1725	1725	1725
Weight, net lbs.	240	300	305	325
Price, installed in Chicago	$99.50	$134.50	$149.50	$169.50

* * *

Cabinet Materials
Make of cabinet....Seeger
Material used for frame....Wood
Finish of shelves....Tinned
Material used for breaker strip..Panelyte
Material used for gasket....Rubber
Make of gasket....Miller
Make of insulation....Dry-Zero

Finish
Cabinet finish (exterior)....C models—Dulux; CP models—porcelain
Cabinet finish (interior)....Porcelain

Hardware
Make of hardware....Grand Rapids Brass
Process of manufacture....Cast
Basic metal of hardware....Brass
Finish of hardware....Chromium

Lubrication
Brand of compressor lubricant....Argon Ice Machine
Quantity in system....1 pt.
How often should motor be oiled....Semi-annually

Compressor
Make of compressor....Sunbeam
Type of system....Conventional
Type of compressor....Rotary
Compressor drive....Direct
Type of shaft seal....Bellows
Location of compressor....Above

Refrigerant
Refrigerant used....Sulphur dioxide
Amount in system....2 lbs.

Control
Make of control....General Electric
Type of control....Temperature
Temperature regulation method...Manual
How defrosted....Semi-automatic

Motor
Make of motor....General Electric
Type of motor....Capacitor

Condenser
Make of condenser....Bush and McCord
Method of cooling....Fan
Type of condenser....Finned tube

Evaporator
Make of evaporator....Sunbeam
Evaporator construction....Tubular
Metal used....Copper
Type of refrigerant control....Expansion valve
Make of expansion valve....Detroit
Type of ice trays....Aluminum

Special Features
All models—door opener, interior light, door racks, and ice tray release.

Policy
Guarantee on cabinet....1 year
Guarantee on system....1 year
Serviced by....Sears, Roebuck
Are replacement parts furnished to independent service companies....No

Despatch Brings Out Small Drying Ovens

MINNEAPOLIS—Just introduced by Despatch Oven Co. of this city are a one-unit and a two-unit dehydrating oven for use by refrigeration service stations.

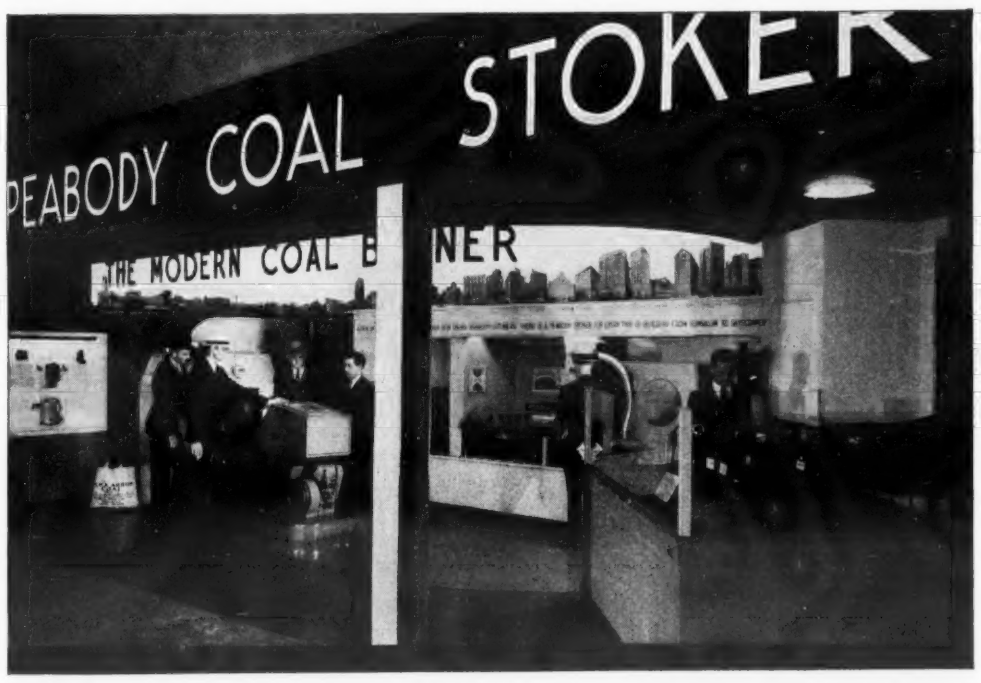
The new ovens are designed **for** the service man who has no need for a larger size dehydrating oven.

Models C-5 and C-10, as the new ovens are designated, are constructed of special oven steel and insulated with ½ in. of insulation and finished with a removable top so that the refrigerator unit to be dehydrated is simply lowered into the oven, vacuum connections made and the heat turned on.

A ventilating system is provided which conveys the heat from the heater compartment up and around the unit. Ovens are furnished with either gas or electric heating system and with or without automatic temperature control.

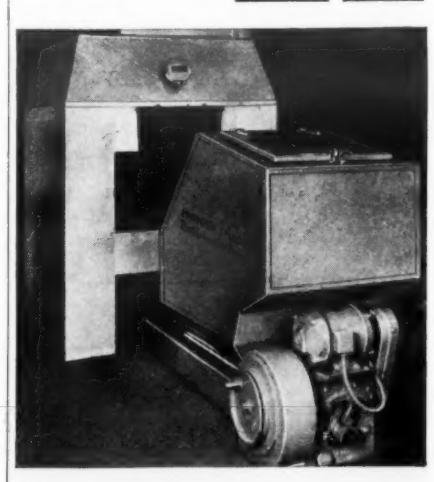
A thermometer is furnished with each oven so that the operator may become familiar with the operation of the oven and obtain just the right temperatures required.

oming to the Fair?



● Thousands of actively interested World's Fair visitors from every part of the country daily view our Peabody Stoker Exhibit in the Home Planning Hall. From among these registered prospects we have prepared valuable lists for dealers in every locality. If you are interested in a Peabody franchise, come in for a discussion and get the prospect list covering your proposed territory.

Peabody Stoker is **FIRST** *in background of engineering experience . . .* **FIRST** *in background of service experience . . .* **FIRST** *in background of retailing experience . . .* **FIRST** *in sales in Chicago area . . .* **FIRST** *in exclusive features that make Automatic Coal Heat the modern economical necessity.*



● *The Peabody Unitype Stoker*, above, is designed for fine appearance . . . engineered for fine performance . . . provides abundant heat for dwellings, from single homes to 12-family apartments and for small industrial and commercial plants.

Catalog and information on complete line of stokers will be sent on request.

● You have had fine success with refrigeration for the past three years. Now there comes a product with as great a potential for dealer operating success, a product that fits right into the set-up of your business, a product that promises to be the next major appliance to enjoy volume sales . . . it's the Peabody Stoker, the modern coal burner that provides abundant heat for dwellings, from single homes to 12-family apartments and for industrial and commercial plants.

The Peabody Stoker is package merchandise. You do not need to be a plumber or a heating contractor to handle it. Your regular refrigeration service department is qualified to install and service it.

For you, it puts a sales peak where there has been none. Peabody Stoker big selling season starts right where refrigeration sales let up, and it keeps on until your peak radio season arrives.

Your locality is packed with prospects for this modern, economical necessity, the Peabody Stoker. You have one of the broadest appliance markets with which to work, including homes, schools, apartments, department stores, institutions and industrial plants.

Peabody Stoker is well within the purchasing power of your regular customers and there is a substantial dealer profit for you.

Some responsible, well financed individual or firm in your locality will become the Peabody dealer. Start investigating now and you may be the one. Write, wire or 'phone for complete Peabody Stoker catalog and details of the valuable dealer franchise arrangement.

MODERN COAL BURNER COMPANY, 20 N. Wacker Drive, Chicago, Ill.
OWNED AND OPERATED BY PEABODY COAL COMPANY

PEABODY STOKER
the Modern Coal Burner

Outmoded Homes to Be Modernized in Seventeen Cities

PHILADELPHIA — The *Ladies' Home Journal* is opening a home modernization campaign which calls for demonstrations of remodeling and modernizing in 17 of the country's major cities. In each of these cities, an outmoded house will be remodelled, opened for public inspection, and used as headquarters for dissemination of information on household modernization.

Cooperating with the publication in this drive are a number of building-and-loan associations, members of the Federal Home Loan Bank System, and the Better Homes in America Organization. J. Harold Hawkins, architectural editor of the *Journal*, states that "there will be no direct commercial tie-up with either manufacturers or distributors of building products or home equipment."

Cities in which "models of modernization" will be established are Boston, New York City, Newark, Atlanta, Chicago, Indianapolis, Shreveport, Houston, Lansing, Mich., Peoria, Ill., Little Rock, Kansas City, St. Paul, Portland, Ore., Los Angeles, Washington, D. C., and Cincinnati.

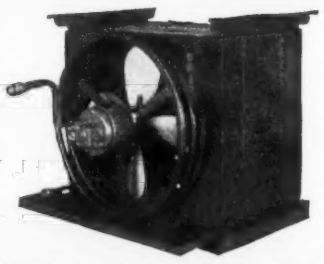
Cooperative Radio Program Promotes G-E and Food Products

INDIANAPOLIS—Cooperative radio school—"the Mixing Spoon of the Air"—originated by Harry Warren, sales promotion manager of Hoosier Electric Refrigerator Corp., Indianapolis G-E distributor, is being used here to promote non-competitive food products and G-E appliances in the Indianapolis trading area.

The broadcast is sent from the General Electric kitchen of the Hoosier organization for a 15-minute period each Monday, Wednesday, and Friday afternoon over station WKBF. A visible audience limited to the capacity of the kitchen auditorium is invited to each demonstration. Number of products named in each broadcast is limited to five.

In the cooking preparations, only products of the participating firms are used, and as each is brought into use the demonstrator names and discusses it briefly. Brand names are mentioned in recipe and menu leaflets and other literature sent out in conjunction with the broadcasts.

KRAMER



UNIT COOLERS
Manifolded
for **FREON**

and greater than 20° differentials between air and refrigerant for process and commercial comfort cooling applications.

[SEND FOR new literature about these Coolers!]

TRENTON AUTO RADIATOR WORKS
Main Offices and Factory, Trenton, N.J.
NEW YORK, 210-212 West 65th Street
PITTSBURGH, 5114 Liberty Avenue

REAL PROPERTY SURVEY FOR 12 MORE CITIES

36 Cities Have Given Inventory Data

WASHINGTON, D. C.—Releases by the Bureau of Foreign and Domestic Commerce have made Real Property Inventory data available for 12 more of the 63 cities covered in this nation-wide government survey.

Of chief interest to the refrigeration industry are the tabulations of the number of dwellings using electricity for lighting and the number owning mechanical refrigerators.

Type, age and condition of structure, property value, and use of modern sanitary conveniences are among the other important data included.

Information concerning the following 12 cities was given in the May 23 issue of ELECTRIC REFRIGERATION NEWS: Casper, Wyo., Boise, Ida., Columbia, S. C., Greensboro, N. C., Butte, Mont., Little Rock, Ark., Nashua, N. H., Hagerstown, Md., Burlington, Vt., Reno, Nev., Paducah, Ky., and Wichita Falls, Tex.

Cities for which data was given in the June 20 issue are as follows: Sioux Falls, S. D., Austin, Tex., Asheville, N. C., Pueblo, Colo., Frederick, Md., Oklahoma City, Okla., Albuquerque, N. M., Phoenix, Ariz., Baton Rouge, La., Decatur, Ill., Shreveport, La., and Fargo, N. D.

Gas Association Names May Contest Winners

NEW YORK CITY—Gas companies that won prizes or received "honorable mention" for May in the nation-wide gas refrigeration sales campaign sponsored by the American Gas Association Refrigeration Committee have been announced by Chairman Ronald A. Malony.

The campaign is known in the industry as the "Go-Getter" or "blue vase" contest. It began in April to continue through this month. Cash prizes totaling $6,700 will be distributed along with six blue vases which will go as trophies to companies coming out ahead in their respective divisions when the final returns come in.

(Editor's Note: This contest apparently received its inspiration from Peter B. Kyne's story, "The Go-Getter," in which Cappy Ricks tested a young man's initiative by sending out to get a certain remarkably hard-to-find blue vase.)

In the metropolitan group of companies known as division A, the prizes were won by the Washington Gas Light Co. Other division leaders were: Providence Gas Co., division B; Natural Gas Co. of West Virginia, division C; Utah Gas & Coke Co., division D; Tyler Gas Service Co., Tyler, Tex., division E; Iowa-Nebraska Light & Power Co., division F.

Twenty-three companies that received honorable mention for May were: division A: Southern California Gas Co., Los Angeles; Kings Appliance Corp., Brooklyn; Philadelphia Gas Works Co.; Boston Consolidated Gas Co.

Division B: Dallas Gas Co., Dallas; Columbus Gas & Fuel Co., Columbus; New Haven Gas Light Co., New Haven, Conn.; Public Service Electric & Gas Co., Newark.

Division C: Southern Counties Gas Co. of California, Pomona, Calif.; Harrisburg Gas Co., Harrisburg, Pa.; Scranton-Spring Brook Water Service Co., Scranton, Pa.; Consumers Gas Co., Reading, Pa.

Division D: Southern Cities Distributing Co., Shreveport, La.; Ohio Fuel Gas Co., Newark, Ohio; North Penn Gas Co., Port Allegany, Pa.; Central Illinois Electric & Gas Co., Rockford, Ill.

Division E: United Gas Public Service Co., Opelousas, La.; Community Natural Gas Co., Eastland, Tex.; Texas-Louisiana Power Co., Breckenridge, Tex.; Union Gas System, Coffeyville, Kan.

Division F: United Gas Public Service Co., Huntsville, Tex.; Gas & Electric Appliance Co., Caldwell, Ohio; Virginia Gas Distributing Corp., Waynesboro, Va.

	Charleston, S. C.	Springfield, Mo.	Zanesville, Ohio	Jackson, Miss.	Lincoln, Nebr.	Santa Fe, N. M.	Portland, Me.	Topeka, Kan.	Williamsport, Pa.	Richmond, Va.	Kenosha, Wis.	Knoxville, Tenn.
TYPE OF DWELLING No. of Structures												
Single family	5,985	14,079	7,671	8,125	17,256	1,818	5,686	14,857	5,676	32,320	8,446	27,498
2 family	2,615	367	890	1,171	627	145	2,818	739	2,023	5,865	2,008	928
3 family	172	13	7	15	19	2	951	21	50	244	16	22
4 family	250	62	38	89	147	7	154	119	50	646	71	140
Row house	55	3	11	10	8	30	35	15	95	341	1	28
Apartment	86	51	56	28	280	8	352	130	121	400	28	128
Other dwelling	1,596	226	369	125	443	135	479	509	444	1,385	488	444
Total structures	10,759	14,801	9,042	9,563	18,780	2,145	10,475	16,300	8,459	41,201	11,058	29,188
TYPE OF DWELLING No. of Dwelling Units												
Single family	5,985	14,079	7,671	8,125	17,256	1,818	5,686	14,857	5,676	32,320	8,446	27,498
2 family	5,230	734	1,780	2,342	1,254	290	5,636	1,478	4,046	11,730	4,016	1,856
3 family	516	39	21	45	57	6	2,853	63	150	732	48	66
4 family	1,000	248	152	356	588	28	616	476	200	2,584	284	560
Row house	289	9	44	34	45	119	146	59	409	1,669	4	181
Apartment	499	560	438	204	2,866	54	3,591	1,032	833	4,247	252	1,138
Other dwelling	4,392	531	572	316	1,176	405	1,161	1,127	827	1,675	793	976
Total dwelling units	17,911	16,200	10,678	11,422	23,242	2,720	19,689	19,092	12,141	54,957	13,843	32,275
AGE OF STRUCTURES												
0—4 years	236	773	284	675	804	466	455	610	252	2,447	657	1,872
5—9 years	198	2,616	1,188	2,820	2,908	436	938	2,208	959	6,344	2,669	5,473
10—14 years	599	1,656	670	1,236	2,441	174	729	1,251	586	4,518	1,605	3,842
15—19 years	860	1,465	545	1,171	2,173	146	779	1,190	427	3,883	1,603	3,217
20—24 years	871	1,760	659	1,022	2,339	165	708	1,657	442	4,350	982	3,295
25—29 years	611	1,392	871	627	1,855	65	573	1,446	448	2,877	841	3,040
30—34 years	1,247	1,820	773	1,224	2,800	100	1,005	2,179	798	4,139	797	3,769
35—39 years	427	904	486	196	924	67	655	1,088	566	2,020	420	1,267
40—49 years	1,367	1,662	1,290	255	1,902	191	1,276	2,933	1,831	5,171	734	2,156
50—74 years	2,130	688	1,756	266	563	211	2,234	1,775	1,829	4,713	536	1,113
75 years and over	2,023	29	511	40	10	119	1,082	34	314	716	199	127
Not reported	190	36	4	31	61	5	41	19	7	23	15	17
CONDITION OF STRUCTURE												
Good	4,152	4,309	2,770	2,099	8,692	1,047	4,906	5,710	3,207	15,917	4,043	8,124
Needs minor repairs	3,666	7,450	4,378	5,189	7,208	762	4,295	7,261	3,491	17,650	5,220	14,051
Needs structural repairs	2,342	2,690	1,744	2,092	2,622	302	1,160	3,035	1,651	6,843	1,653	5,967
Unfit for use	427	338	144	178	228	28	93	366	90	758	130	1,024
Not reported	172	14	6	5	30	6	21	18	20	33	12	22
MATERIALS OF CONSTRUCTION												
Wood	9,131	13,256	7,651	8,309	15,858	32	9,486	14,843	5,986	24,298	9,216	26,585
Brick	1,267	998	1,171	977	1,388	189	900	688	2,092	12,812	1,259	1,932
Stone	73	111	13	...	81	5	23	107	27	101	15	88
Concrete	65	48	74	9	79	16	23	24	67	92	87	57
Stucco	62	363	112	258	1,303	106	23	691	276	3,823	422	361
Other	4	22	19	2	62	1,795	8	29	11	65	51	147
Not reported	157	3	2	8	9	2	12	8	...	10	8	18
GARAGES AND AUTOMOBILES												
Structures with garages	3,898	10,950	5,085	4,562	13,738	1,065	4,329	10,977	3,985	14,986	7,335	13,281
Without garages	6,673	3,805	3,948	4,970	5,003	1,075	6,098	5,395	4,446	26,152	3,706	15,882
Not reported	188	46	9	31	39	5	48	18	28	63	17	25
Car capacity	5,482	13,391	7,676	6,668	19,179	1,324	6,888	14,546	6,687	22,072	10,827	16,658
No. of automobiles	4,814	9,007	5,217	4,806	15,484	1,163	7,425	11,168	5,317	22,443	6,860	13,618
DWELLING UNITS												
Total dwelling units	17,911	16,200	10,678	11,422	23,242	2,720	19,689	19,092	12,141	54,957	13,843	32,275
Rental units (includes vacants)	14,587	8,786	5,659	7,832	12,572	1,495	13,774	9,944	6,915	34,970	7,056	20,155
No. occupied by owner	3,324	7,414	5,019	3,590	10,670	1,225	5,915	9,148	5,226	19,987	6,787	12,120
Occupied dwelling units	16,608	15,421	9,810	11,211	21,448	2,491	17,372	18,199	11,215	50,445	13,235	30,294
Vacant dwelling units	1,303	779	868	211	1,794	229	2,317	893	926	4,512	608	1,981
Vacancy ratio	7.2%	4.8%	8.1%	1.8%	7.7%	8.4%	13.3%	4.6%	7.6%	8.2%	4.4%	6.1%
Extra families	901	1,892	697	1,406	1,505	148	803	1,363	657	6,526	743	3,141
RACE OF OCCUPANTS												
White persons	8,093	14,876	9,356	6,545	21,225	2,469	17,277	16,350	10,920	38,066	13,172	25,887
Persons of other races	8,501	468	450	4,656	110	15	37	1,842	259	12,315	52	4,399
Persons of race not reported	14	77	4	10	113	7	58	7	36	64	11	8
Total occupied	16,608	15,421	9,810	11,211	21,448	2,491	17,372	18,199	11,215	50,445	13,235	30,294
DURATION OF OCCUPANCY												
0—5 months	4,537	3,755	1,776	2,706	4,641	717	3,189	3,940	1,428	10,483	1,896	7,132
6—11 months	2,240	1,723	915	1,451	2,072	265	1,353	1,751	1,149	3,329	1,004	3,315
1 year	2,046	1,433	963	1,439	2,151	221	1,795	1,732	1,155	5,914	1,261	3,181
2 years	1,141	966	687	786	1,270	149	1,343	1,101	775	3,503	918	2,127
3—4 years	1,568	1,450	938	1,356	2,018	250	1,841	1,681	1,025	5,794	1,364	3,222
5—9 years	1,772	2,363	1,573	1,867	3,600	321	3,038	2,947	2,011	9,517	2,922	4,849
10—19 years	1,815	2,383	1,788	1,085	3,773	239	2,777	3,133	2,075	7,717	2,606	4,264
20 years and over	1,472	1,283	1,271	508	1,800	300	1,941	1,888	1,572	4,112	1,253	2,192
Not reported	17	65	1	13	123	29	95	26	25	76	11	12
DURATION OF VACANCY												
0—5 months	649	433	390	151	1,143	161	1,102	620	405	2,724	277	1,218
6—11 months	245	93	135	27	298	35	420	120	204	381	72	313
1 year	169	61	149	11	157	17	330	53	116	710	115	199
2 years and over	232	69	191	15	133	12	274	86	111	671	123	244
Not reported	8	123	3	7	63	4	191	14	90	26	21	7
MONTHLY RENTAL												
Under $10.00	7,493	2,537	1,704	3,095	871	439	318	1,678	330	6,047	336	6,894
$10.00 to 14.99	1,896	2,431	1,554	1,528	2,282	147	1,534	2,132	1,659	7,232	1,772	5,818
$15.00 to 19.99	1,294	1,292	1,030	816	2,305	124	2,237	1,639	1,720	5,498	2,201	2,548
$20.00 to 29.99	2,094	1,255	999	1,190	3,539	308	4,686	2,334	2,001	6,733	1,906	2,553
$30.00 to 49.99	1,297	780	296	1,018	2,744	357	3,884	1,764	889	6,612	622	1,720
$50.00 to 74.99	214	80	33	133	340	36	665	269	122	1,903	118	304
$75.00 and over	57	14	8	13	40	10	66	18	25	519	29	44
Rent free or not reported	242	397	35	39	451	74	384	110	169	426	72	274
NUMBER OF ROOMS												
1	3,468	378	83	121	696	243	400	451	147	248	42	349
2	3,242	989	265	1,054	1,759	484	972	976	300	1,909	315	1,570
3	2,755	1,856	849	3,199	1,997	574	1,370	1,949	568	8,972	857	5,559
4	2,468	4,112	1,665	1,888	2,455	557	2,461	3,052	1,173	9,817	2,097	8,204
5	1,944	4,357	3,243	2,096	5,715	428	4,793	5,522	1,724	9,615	4,807	7,777
6	1,834	2,002	2,618	1,825	4,765	208	4,462	3,566	5,307	10,683	3,137	4,268
7	732	1,037	1,012	716	2,664	87	2,266	1,940	1,352	5,363	1,378	2,046
8	701	771	598	291	1,765	54	1,203	980	839	4,704	710	1,434
9 and over	753	589	334	220	1,281	76	1,524	652	611	3,620	485	1,070
Not reported	14	109	11	12	145	9	238	4	120	26	15	7
EXTENT OF CROWDING												
Very spacious	2,817	4,637	4,057	2,013	7,479	557	6,854	6,546	4,988	14,281	3,743	6,430
Spacious	2,554	3,873	2,321	2,822	5,595	474	4,454	4,741	2,852	14,205	3,591	7,143
Adequate	4,655	3,873	2,150	3,357	5,291	573	3,832	4,411	2,330	12,386	3,967	7,803
Crowded	4,837	2,559	1,204	2,686	2,710	622	2,089	2,271	988	8,613	1,862	7,826
Overcrowded	1,170	298	79	269	197	170	69	169	22	764	50	916
Greatly overcrowded	547	85	15	43	55	85	8	52	...	99	6	165
Not reported	28	96	4	21	121	10	66	9	35	97	16	11
TYPE OF HEATING APPARATUS												
Hot air furnace	270	4,162	4,402	148	14,660	132	1,888	8,690	5,495	1,910	8,787	4,687
Steam or vapor	136	487	261	103	1,907	236	10,070	957	1,489	3,567	444	2,524
Hot water	69	802	385	87	2,107	44	2,063	512	1,694	14,228	1,874	309
Heating stove	13,516	10,594	4,021	6,466	4,314	2,245	5,451	8,835	3,402	34,703	2,690	13,182
Other	3,319	53	1,607	4,608	138	57	126	52	24	372	31	11,509
None	591	40	0	3	38	2	11	41	7	154	3	56
Not reported	10	62	2	7	78	4	80	5	30	23	14	8
FUEL USED												
Coal	4,761	9,689	9,802	2,456	16,943	941	15,916	11,846	11,748	48,763	13,388	30,117
Wood	10,519	4,944	1	2,841	717	944	357	1,716	40	4,645	16	1,910
Gas	276	733	809	6,108	2,903	819	62	5,114	73	34	14	6
Oil	576	568	1	...	2,371	9	2,109	239	225	1,217	363	15
Other	1,271	72	61	6	140	1	1,067	111	17	97	29	187
None	485	27	0	2	39	1	73	42	3	95	1	17
Not reported	23	167	4	9	129	5	105	24	35	106	32	23
RUNNING WATER												
Cold	10,321	7,649	3,077	4,247	4,284	421	3,846	3,679	2,815	23,214	2,812	12,715
Hot and cold	3,702	6,184	6,639	5,720	17,964	1,523	15,634	12,039	9,172	24,346	9,938	13,398
None	3,881	2,298	961	1,449	912	770	125	3,372	126	7,383	1,082	6,153
Not reported	7	69	1	6	82	6	84	2	28	14	11	9
LIGHTING												
Gas	11	1	253	...	4	...	59	12	9	109	15	85
Electricity	8,926	13,880	9,462	7,307	22,550	2,031	18,858	18,079	11,297	43,697	13,398	22,161
Other or none	8,950	2,202	958	4,075	554	680	533	995	684	11,121	411	10,018
Not reported	24	117	5	40	134	9	239	6	151	30	19	11
COOKING												
Gas	6,291	8,164	9,147	6,161	18,602	877	13,288	15,855	9,070	28,743	11,690	5,477
Electricity	182	109	95	3	102	77	294	61	58	1,924	98	629
Other or none	11,414	7,809	1,481	5,219	4,403	1,757	5,868	3,169	2,862	24,257	2,036	26,156
Not reported	24	118	5	39	135	9	239	7	151	33	19	13
PRIVATE INDOOR WATER CLOSETS												
None	8,725	4,361	3,580	4,379	3,665	1,190	2,501	6,183	1,062	19,356	1,282	9,548
1	8,402	11,047	6,723	6,469	17,158	1,426	16,122	11,968	10,577	30,378	11,658	20,754
2	599	567	299	474	2,023	65	618	792	311	3,577	787	1,484
3	118	121	43	56	180	22	159	116	79	1,050	97	475
4	34	...	16	13	49	5	30	22	...	358	...	...
5 and over	9	...	13	6	33	1	11	5	...	192	...	...
Not reported	24	104	2	25	134	11	248	6	112	46	19	14
TUBS AND/OR SHOWERS												
None	10,076	5,009	3,965	5,198	4,187	1,201	3,417	6,378	2,541	19,007	2,341	15,773
1	7,185	10,654	6,586	5,685	17,857	1,422	15,545	12,202	9,272	31,972	11,337	15,232
2	494	351	100	451	927	66	361	431	178	2,856	206	1,012
3 and over	132	58	27	65	133	20	126	75	38	1,083	47	248
Not reported	24	128	...	23	138	11	240	6	112	39	22	10
MISCELLANEOUS												
Mechanical refrigeration	1,637	2,783	1,448	1,155	6,403	294	2,884	3,216	1,677	14,102	1,743	3,524
Vegetable garden in 1933	258	8,659	3,674	4,446	9,067	215	2,238	4,364	3,414	6,374	6,641	8,521

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AIR CONDITIONING

York Develops Table-High Cabinet to Deaden Sound of Condensing Unit

YORK, Pa.—Development of a new decorative sound-proofing cabinet, of attractive appearance and design, finished to harmonize in appearance with other appointments of an office or home, is announced by York Ice Machinery Corp.

These sound-proofing cabinets were designed for use where noiseless operation of mechanical equipment is a requirement.

The new sound-proofing cabinets, which completely enclose condensing units, are attractively finished in walnut veneer, built at table height, which gives them an added utility where an extra table is useful. An extended top, and corner posts and moulding of solid walnut, with solid, artistic legs of turned oak, are further features.

The cabinets are furnished with built-up layers of 1-in. thick isolating hairfelt and ⅜-in. insulating board. The cabinet is completely isolated from the base and the floor by felt seal and support strips. The top of the cabinet is removable, making the interior readily accessible for inspection or adjustments.

The legs elevate the whole cabinet sufficiently from the floor to allow cleaning under the cabinet. An adjustable feature is also provided for the leveling of the unit on an uneven floor.

The base of the cabinet, on which the mechanical unit rests, is of heavy steel plate construction, strengthened by braces, and all weight of the unit or interior apparatus is supported on four 1-in. posts, concealed in the oak feet of the cabinet.

All connections are concealed, provision being made for bringing the lines through the floor and base of the cabinet. The water-cooling coils which are a part of each cabinet are of the heavy aluminum finned copper type of construction.

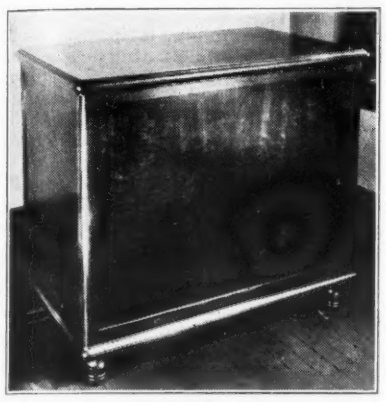
A new type of protective cage for York condensing units is also announced. This cage is constructed of heavy mesh expanded metal, with a framework of formed angle iron which makes it especially strong and durable.

Its open mesh construction permits full vision of the entire unit and free circulation of air. At the same time, it covers and protects the unit. By means of special floor clips, the cage may be locked in place to prevent any tampering with the unit. The cage may also be readily removed for adjustment or inspection.

In a store or market, the condensing unit may be protected from damage by boxes or crates which are thrown hurriedly in piles during rush hours. In store rooms or basement storage, merchandise may be stacked close to the unit, with no danger of damage to the machine.

Where safety codes require maximum protection of all machinery, this protective cage is especially helpful, York engineers state.

Sound-Proof



For air-conditioning installations demanding noiseless operations, York offers this walnut cabinet.

400 Auditorium Systems Installed Since Jan. 1

NEW YORK CITY—Installations by its agents since Jan. 1 of this year have brought to more than 400 the number of air-conditioning systems installed in the United States under license of the Auditorium Conditioning Corp., air-conditioning patent holding company here.

According to H. N. Van Derwerker of that organization, the following department stores have put in conditioning systems this season under Auditorium license: G. Fox & Co., Inc., Hartford; Mandel Bros., Chicago; F. Rubenstein & Co., Inc., New Orleans; Hutzler Bros. Co., Baltimore; Arnstein Bros., New York City; John Shillito Co., Cincinnati; Blauner's Philadelphia; and Miller & Rhodes, Richmond.

Other large installations made recently include the U. S. Treasury Department, Washington, D. C.; Grand Rapids (Mich.) Civic Auditorium; Jackson County Courthouse, St. Louis; Kansas City Municipal Auditorium; and Cincinnati Union Terminal.

Carrier Cools Tap Room Of Buffalo Hotel

BUFFALO — The Tap Room and Lounge of the Lafayette Hotel here has just been furnished with air conditioning by the Cooney Refrigeration Co., Inc., Carrier distributor in this territory.

This includes some 38,000 cu. ft. of conditioned space, served with cooled air from Carrier slotted outlets at the end of the room, near the ceiling. Refrigeration is provided by a 7½-hp. Carrier condensing unit installed in the basement to operate in connection with Carrier coils.

Approximately 1,000 c.f.m. of fresh air is supplied continually, according to L. N. Reed of the distributorship. Conditions maintained indoors are 80° F. and about 50 per cent relative humidity. Rundell & Weigel Co. installed the duct work.

New York Cocktail Bar & Two Offices Cooled by Frigidaire

NEW YORK CITY — While last year installations of Frigidaire air-conditioning equipment in New York City restaurants outnumbered those made in large offices, the opposite has been true so far this season, according to J. W. Mersfelder, manager of the air-conditioning division of Frigidaire Sales Corp. here.

One of this company's most recent sales was made to the Hotel Weylin for its cocktail barroom. A 10-hp. and a 3-hp. compressor were required, and their installation was a difficult problem because of the costly decorations and unusual lighting arrangements in the room.

The latter is an L-shaped, low-ceilinged space with its lights covered by an artificial roofing of parchment. Floor area is 850 sq. ft., and whereas it was designed to seat 62 persons, table accommodations have been placed there for 95 to 100.

Moves 4,000 C.f.m. of Air

Concealed ducts are used with the system, which does a year-'round job of conditioning, and moves 4,000 cu. ft. of air per minute.

The two compressors are installed in the basement of the hotel, but the blower, heating coils, motor-operated dampers, cooling coils, filters, and fresh-air intake are located in a weather-proofed and insulated housing on the roof of a structure in the hotel courtyard.

Since this installation was made, the same hotel has contracted with Frigidaire for another system to be installed in its main restaurant, which will be opened in September, according to Mr. Mersfelder.

International Paper Offices

Another recent Frigidaire installation was made in the building of the International Paper Co., to cool 11 executive offices and the dining room. A 10-hp. and 3-hp. compressor were used. Chief installation problem here was maneuvering the duct through the "hung" ceilings of the offices.

Twelve self-contained units, each with a refrigeration capacity of two-thirds of a ton, have been installed to condition air in nine executive offices of E. R. Squibb & Sons. The units are located below windows, through which fresh air is introduced. The cabinet conditioners perform year-'round functions.

Increases Selling Force

Frigidaire of New York has increased its air-conditioning selling force this season, according to the manager, who stated that despite the larger number of inquiries from prospects this year, four out of five sales are resulting from canvass calls.

"The price-cutting situation in air conditioning is going to muddy-up the entire industry," declared Mr. Mersfelder. "And the lack of knowledge about it is appalling. Within the industry, the glaring need is for men who can recommend the proper equipment, and install the equipment properly.

"Too many men today not only know very little about putting in the apparatus, but they don't know how to fill the owner's requirements. Air-conditioning engineers must not only comply with an owner's demands, but must specify equipment which will fill needs of which the buyer has no knowledge."

In other words, the manager summarized, the great need is for "trained application," and his own definition for that is: "The accomplishment of that indefinable condition which will give satisfaction of all needs, even those not recognized by a customer."

5,000 Attend Newark Air-Conditioning Show

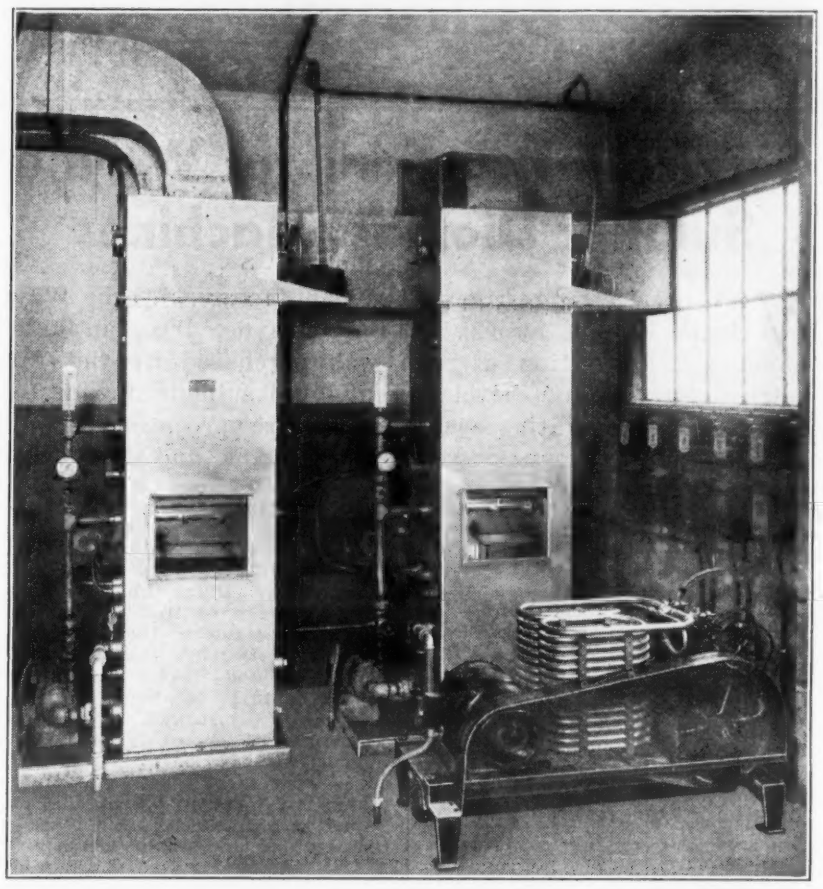
NEWARK—Five thousand persons attended New Jersey's first air-conditioning show held in the building adjoining the Public Service Terminal here from June 4 to 9. The show comprised 25 displays of air-conditioning equipment and allied products.

On June 5, Willis H. Carrier addressed 120 architects, builders, plumbers, and heating contractors who had received special invitations to attend the show. His address stressed the importance of humidity control in air conditioning.

Organizations exhibiting at the affair were as follows:

Frigidaire Sales Corp.; Mumford-Hinrichsen, Inc.; York Ice Machinery Corp.; Air Conditioning Corp.; Carrier Engineering Corp.; Abbott Co.; Bryant Heater & Mfg. Co.; Graybar Electric Co., Inc. (Ilg Electric Ventilating Co.); Surface Combustion Corp.; Campbell Metal Window Corp.; Rock-Wool Insulating Co. of New Jersey; Home Insulation Co. of New Jersey; Johnson & Kirkman, Inc.; American Gas Products Corp.; General Gas Light Co.; Kelvinator Sales Corp.; New Jersey State Association of Master Plumbers; John C. Fullerton, Inc.; Rudy-Tyler Sales Co.; and the Henry Furnace & Foundry Co.

Air Conditioning a Flour Mill



Olchoff Engineering Co., Kansas City distributor for the Frick Co., designed and installed the above central-type air-conditioning system for the experimental mill and laboratory of the Washburn-Crosby Milling Co. Temperatures of 70 to 80° F. with 50 to 65 per cent relative humidity are maintained. In the picture are shown the 5-hp. Frick condensing unit and the two Olchoff conditioning chambers.

A LIBERAL REWARD

A LIBERAL reward will be paid for information leading to proof of the existence of air-conditioning systems prior to May 3, 1918 in which air, by-passed around a dehumidifier, was mixed with conditioned air and delivered directly to a room; or prior to December 22, 1922 in which automatically varied volumes of dehumidified air and unconditioned recirculated air were mixed.

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3. Adaptable for every size, form, space, and type of refrigerating cabinet.

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SERVICE

Service Instructions for Wayne Sulphur Dioxide Machines

WAYNE electric refrigerators, manufactured by the Wayne Home Equipment Co. of Fort Wayne, Ind., until that company's refrigeration division was purchased by the Apex Electrical Mfg. Co. of Cleveland, employed sulphur dioxide in a conventional refrigerating system using a reciprocating compressor, an automatic expansion valve, a brine tank, and thermostatic control. Refrigerating units were furnished both for remote installation and as complete self-contained refrigerators. To aid service men in maintaining Wayne refrigerators, the following service instructions have been prepared.

Filling Cooling Unit

The cooling unit should be filled with a *thoroughly mixed* non-freezing solution of 50% water and 50% denatured alcohol as follows:

Type of Refrigerator	Capacity Gal.
B-5	2
B-7	3½
B-9	4
B-12	5
B-7 R	3½
B-9 R	3½
B-12R	5½
B-15R	6½

This solution should be siphoned into the unit, as pouring it may cause it to be spilled on the lacquer finish. After unit is filled, the cap and front cover plate must be replaced. Make sure the unit is filled to top as coils must be covered with the brine solution.

Inspection

Read gauges after machine has run a short time. Under normal operation, pressure gauge should show 65 lbs. at 70° room temperature and a correspondingly higher reading at higher room temperatures. Compound gauge should show:

Compressor Unit	Inches of Vacuum
A-1	4 to 6
A-2	1 to 3
F-1	4 to 8
C-1	6 to 8
C-2	4 to 6
C-3	0 to 2

On the first cycle the pressure may be as high as 110 lbs. and compound gauge may show a reading higher than normal but the machine may be safely left operating if these higher readings are not exceeded.

Look over all parts of machine and connections carefully. Check the thermostat setting. Take another reading of the gauges, which should show 65 lbs. pressure at 70° F. room temperature and a vacuum on the compound gauge as indicated above.

If compound gauge reading is not approximately correct, expansion valve "F" should be adjusted. See Fig. 1. To increase the vacuum turn the adjusting screw on the expansion valve counter-clockwise or out. To decrease the vacuum turn the adjusting screw clockwise or in.

When pressure and vacuum are found to be correct, turn double seated valves counter-clockwise as far as they will go. This will close the opening to gauge connections.

Remove gauges and replace plugs (U) and (T) using coating of shellac on male threads only. Take care to get no shellac inside valves.

Take a temperature reading of the cabinet, using a good grade tested thermometer. Place the thermometer at the bottom of the food compartment and leave it there for about 8 minutes. Be sure that the door is tightly closed. The temperature should be 42 to 44° F.

If any adjustment is necessary where Penn control is used, follow instructions as outlined on inside cover of control. With the Mercoid temperature control, turn the main adjusting cap *down* to increase the temperature, and *up* to decrease it.

Cooling Unit

The Wayne cooling unit consists of a tank constructed of a heavy gauge copper with all exposed surfaces tinned.

Within the tank is located the expansion coil of copper tubing, one end of which is connected to the expansion valve and the other to an elbow for attaching the suction return line.

In operation the tank is filled with a non-freezing solution of 50% water and 50% denatured alcohol which stores the cold during the operating period and gives it off as needed to maintain a constant temperature in the cabinet. This reduces the frequency of operating periods.

Expansion Valve

The Wayne expansion valve is attached to the cooling unit and controls the amount of liquid entering the expansion coils in accordance with the pressure within the coils.

The expansion valve is known as a balanced type valve of sylphon construction. By adjusting the valve, the pressure within the coils can be regulated.

Compressor

Wayne compressors are of the reciprocating type, with a piston, connecting rod, and crankshaft. They are built with one and two cylinders. A cross section of a one-cylinder compressor is shown at the right.

A metallic bellows type of seal is used in the compressor to prevent a leakage of oil or gas from the crankcase at the point where the crankshaft projects through the casing and also to prevent any air or moisture entering the crankcase when the machine is being operated on a vacuum or at less than atmospheric pressure.

The Wayne seal can be removed or replaced without disassembling the compressor.

The main compressor bearings are lubricated by forced-feed oiling.

Wayne units employ a thermostatic control. This is regulated by the temperature of the brine solution; when the brine reaches a predetermined point the thermostat starts the compressor, stopping it when a predetermined low temperature of the brine is produced.

Handling Sulphur Dioxide

When handling sulphur dioxide where there is a possibility of its escaping in large quantities or where ventilation is poor, a gas mask should be worn.

Whenever possible, discharge sulphur dioxide into lye solution or out of doors.

In releasing sulphur dioxide care must be taken that it does not come in contact with vegetation, birds, or small animals, as they are particularly susceptible to the effects of the gas and a comparatively small amount will often prove fatal.

Cylinders containing sulphur dioxide should be kept in a cool place. Valves on empty cylinders should always be kept closed to prevent possibility of moisture entering.

Operating Instructions

Before turning stems of double seated valves (H. J. and K in Fig. 1, section of valve shown on page 17) in or out, first release packing nut about one-half turn so stem will move freely and not tear packing. After valves have been properly set, packing nuts must be tightened.

Two gauges are required: pressure gauge and compound gauge. A 300-lb. pressure gauge with ¼-in. connection (or ⅛-in. bushed to ¼ in.) with 2½-in. dial is recommended. Compound gauge should read 0-30 vacuum and 0-60 lbs. pressure. Connection should be ¼ in. and dial 2½ in. These gauges can be purchased from a local supply house.

To test for leaks, remove brass plug (T) from double seated compressor inlet valve (H) and insert compound gauge. Open compressor inlet valve (H) by turning counter-clockwise as far as it will go, and then give it a three-quarter turn clockwise so that it will be open to compound gauge.

Remove brass plug (U) from double seated condenser inlet valve (J) and attach a piece of ¼-in. copper tubing to opening. Insert other end of tubing into a bottle.

Now turn compressor over several times by hand to make sure everything moves freely. Start the machine. With valves as set operate machine until compound gauge shows approximately 28 in. of vacuum.

If compressor should throw oil into the bottle, stop it for a few seconds, allowing the oil to settle to bottom of compressor, then start it again. Continue to run the machine at short intervals until a 28-in. vacuum has been reached.

Then stop the machine, remove tube from valve (J) and put pressure gauge in its place. If there are any leaks, they will usually show in about five minutes by a reduction in the vacuum indicated by the compound gauge.

If reading shows less than 5-in. reduction in five minutes, or none at all, there are no leaks. If a reduction in vacuum is 5 in. or more in five minutes, a serious leak is indicated.

First tighten all joints, connections, etc., then draw another vacuum as described above. Read the compound gauge again to see if loss is still 5 in. or more in five minutes. If a leak is indicated proceed to locate it as follows.

Open liquid receiver valve (K) until 5 to 10 lbs. pressure is shown by compound gauge, then close valve (K). This allows sufficient sulphur dioxide to be admitted to the system for making an ammonia test.

Wrap a tuft of cotton on a 10-in. piece of wire and saturate this with ammonia. Run the swab along the tubing around all joints and connections, taking care that the swab does not touch any of them. Location of leaks will be indicated by white smoke.

After leak has been repaired it is vitally important that a vacuum be drawn on the system again so that all air will be removed.

If no leak is found, or after all leaks are tightened or repaired, open liquid receiver valve (K) by turning counter-clockwise as far as it will go; open condenser inlet valve (J) by turning it counter-clockwise as far as it will go, and then give it about a three-quarters turn clockwise so it will be open to condenser and pressure gauge.

Confining Sulphur Dioxide in Condenser and Liquid Receiver

In making practically all repairs, it is necessary to confine the sulphur dioxide in the condenser and liquid receiver as follows:

Stop machine by opening main switch.

Open all doors of cabinet to permit the cooling unit temperature to rise, setting the temperature control in a starting position.

Remove brass plug (T in Fig. 1) from compressor inlet valve (H) and attach compound vacuum and pressure gauge. Screw gauge in tight to prevent intake of air.

Loosen hexagon packing nut on inlet valve (H), and slightly turn stem of valve in clockwise direction until pressure is recorded on compound gauge and retighten hexagon packing nut.

Loosen hexagon packing nut on receiver valve (K)—close valve by turning stem in clockwise direction until seated—retighten hexagon packing nut.

Start machine by closing the main switch.

If machine starts to pump oil which will be indicated by a compressor knock, stop machine for a few minutes to let oil settle.

Operate machine until compound gauge records 28 in. vacuum. If machine pumps oil, stop and start machine at short intervals.

Loosen hexagon nut on condenser valve (J), close valve by turning stem in clockwise direction until seated, and retighten hexagon nut.

The sulphur dioxide is now confined in liquid receiver and condenser.

Completely Discharging Sulphur Dioxide from System

To completely evacuate all sulphur dioxide from the system, proceed as follows:

Stop machine by opening the main switch. Open all doors to cabinet so that cooling unit temperature will rise, setting temperature control in starting position.

Make sure that condenser valve (J in Fig. 1) is closed to gauge opening (turned counter-clockwise as far as it will go).

Remove plug (U) from condenser valve (J). Attach copper tubing at plug opening on condenser valve (J), of sufficient length to discharge end out of doors.

Place discharge end of tube out of window or door. Make sure that compressor valve (H) is turned counter-clockwise as far as it will go.

Remove plug (T) from compressor inlet valve (H), and attach compound vacuum and pressure gauge.

Loosen packing nut on compressor inlet valve (H), and open compressor inlet valve (H) to compound gauge by turning stem one or two full turns in clockwise direction so that reading on gauge may be obtained when machine is started.

Loosen packing nut on condenser valve (J), and open valve (J) to discharge tube by turning stem slowly in a clockwise direction.

After no more gas is discharged under its own pressure, turn condenser valve (J) clockwise as far as it will go.

Start machine by closing the main switch, and operate machine until 28 in. vacuum has been obtained.

Remove discharge tube coupling from condenser valve (J), and stop machine. If machine holds a vacuum, the sulphur dioxide is probably all out of the system. If there is a leak in the system, it is, of course, impossible to secure and hold a vacuum.

Sulphur dioxide may also be discharged under running water. Probably the most convenient way to do this is to place the discharge tube well into the waste of a sink or laundry tray and turn on the water so that it will run as fast as possible—at least fast enough to keep the outlet of the tube under water. The gas must be let out of the system *very slowly*.

If it is not possible to discharge the gas by either of the above methods, it can be discharged into a solution of lye or caustic soda.

To evacuate sulphur dioxide from the system by means of lye or caustic soda, proceed as follows:

Stop machine by opening the main switch, and open doors to cabinet so that the cooling unit temperature will rise setting temperature control in starting position.

Make sure that condenser valve (J) is closed to gauge opening (turned counter-clockwise as far as it will go).

Remove plug (U) from condenser valve (J).

Attach copper tubing at plug opening on condenser valve (J) of sufficient length to take discharge end out of doors.

Prepare a solution of lye or caustic soda by dissolving 4 lbs. of lye or caustic soda in 8 gals. of water. Two lbs. of lye will neutralize 1 lb. of sulphur dioxide. If a large enough container is not available, several batches can be made.

Do not use metal container.

Place discharge end of tube in this solution, taking care to see that it is held or fastened in such a manner that the gas is always discharged beneath the surface. The outlet end should preferably be kept as near as possible to the bottom of the pail.

Make sure that compressor valve (H) is turned counter-clockwise as far as it will go. Remove plug (T) from compressor inlet valve (H)—attach compound vacuum and pressure gauge.

Loosen packing nut on compressor

(Continued on Page 17, Column 1)

Self-Contained Wayne Refrigerator

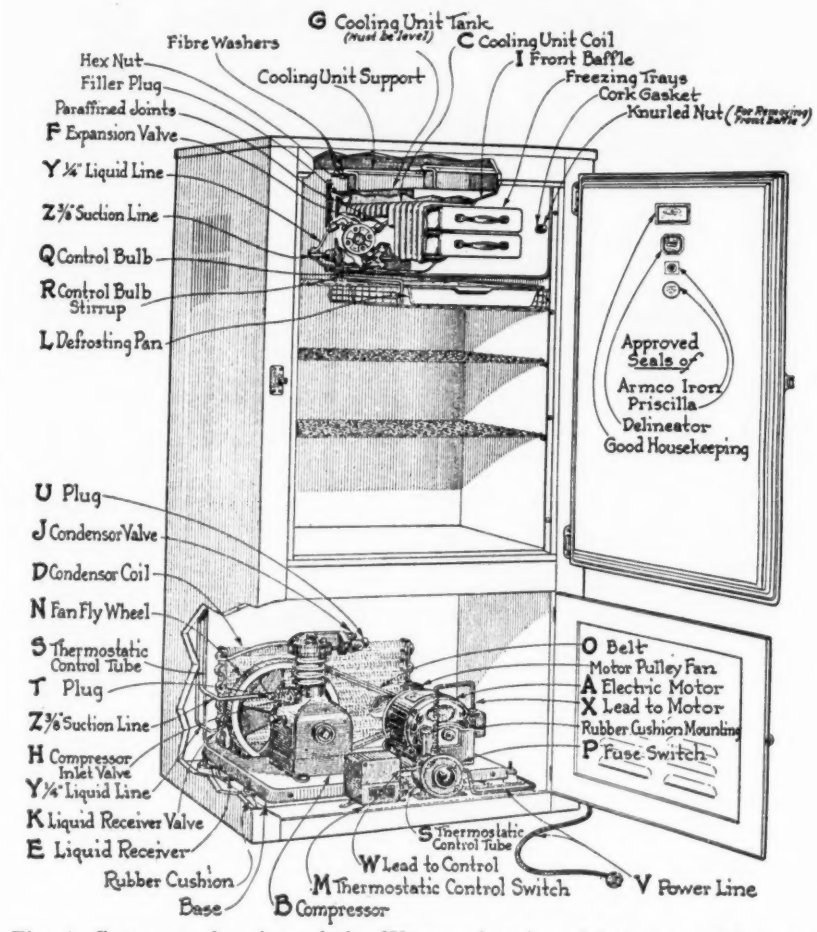
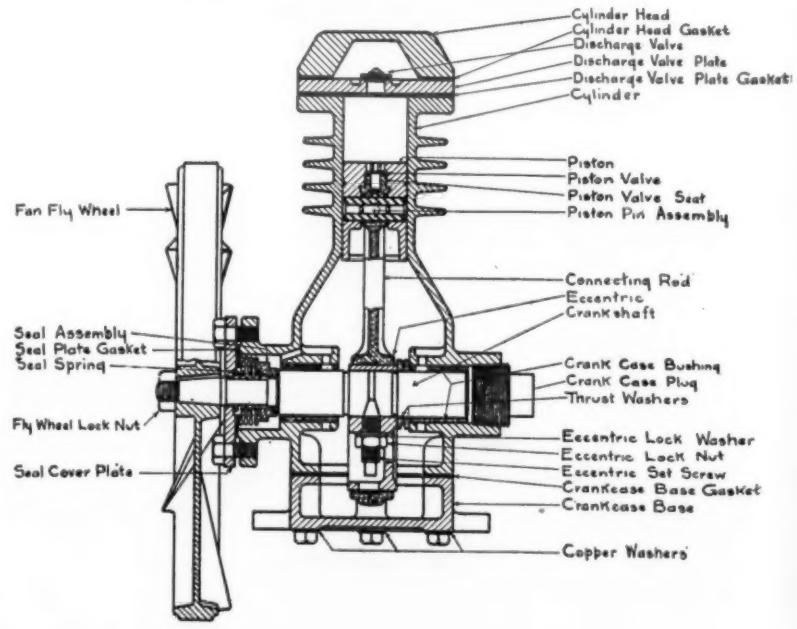


Fig. 1. Cut-away drawing of the Wayne electric refrigerator, with parts lettered for service instructions given on pages 16, 17, and 18 of this issue.

Cross-Section of Compressor



Section of a one-cylinder Wayne household refrigerator compressor. The two-cylinder machine is similar in general design.

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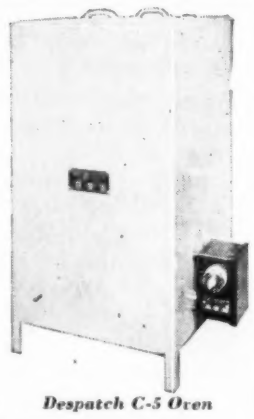

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Handling of SO-2 in Wayne Refrigerator

(Continued from Page 16, Column 5)

inlet valve (H), and open compressor inlet valve (H) to compound gauge by turning stem one or two full turns in clockwise direction so that reading on gauge may be obtained when machine is started.

Loosen packing nut on condenser valve (J) and open it to discharge tube by turning stem slowly in a clockwise direction.

Permit the gas to escape only as fast as it can be neutralized by the solution. When odor of gas can be detected, it is not being neutralized.

After no more gas is discharged under its own pressure, turn condenser valve (J) clockwise as far as it will go, and start machine by closing the main switch.

When a slight odor of sulphur dioxide indicates that the solution is no longer neutralizing the gas, turn condenser valve (J) counter-clockwise as far as it will go and if machine is running, stop it. Replace lye solution with new. Start machine and turn condenser valve (J) clockwise.

Operate machine until 28-in. vacuum has been obtained. *Do not stop machine while the end of the discharge tube is under water as the compressor might suck up water which will damage the compressor.*

Remove discharge tube coupling from condenser valve (J), and stop machine.

If the machine holds a vacuum, the sulphur dioxide is probably all out of the system. If there is a leak in the system, it is, of course, impossible to secure and hold a vacuum.

Discharging into air is the most preferable procedure, and it should be followed in all possible cases.

Completely Charging System with Sulphur Dioxide

Loosen hexagon nut on condenser valve (J in Fig. 1) and close valve against passage to condenser by turning stem in clockwise direction, and remove plug at gauge opening (U) to allow discharge of air. Attach a piece of quarter-inch copper tubing, inserting other end of tubing into a bottle. If oil is pumped over, this will prevent it from splashing over the unit and also shows how much oil was pumped over.

Remove plug (T) in compressor inlet valve (H) and attach compound gauge. Loosen hexagon nut on compressor inlet valve (H) and open valve by turning in counter-clockwise direction as far as it will go. Then crack back sufficiently to secure reading on gauge.

Turn liquid receiver valve (K) counter-clockwise as far as it will go, and start and stop the machine at short intervals until all air has been evacuated, which will be indicated by a 28-in. vacuum on the compound gauge.

After a 28-in. vacuum has been reached and while machine is still running, remove tube and attach pressure gauge at gauge opening valve (J). If the gauge records pressure, there is a leak in the system.

After system has been completely evacuated, close opening to gauge on compressor inlet valve (H) by turning stem in counter-clockwise direction as far as it will go. Remove compound gauge.

Connect sulphur dioxide drum with compressor inlet valve (H), by means of a length of ¼-in. copper tubing (thoroughly dried out) with approximately a 16-in. diameter loop to provide flexibility. (Always place drum in vertical position with the valve extending upward when transferring gas.)

Suspend drum by spring scales or set on platform scales so that you will know when the proper amount of sulphur dioxide has been discharged. (It is important that the drum be kept in a vertical position.)

If platform scales are used, this can be accomplished by a rack or box that will hold the drum upright. Take reading on scales.

Before tightening the charging tube fitting at valve (H), open the valve on the charging drum slightly, allowing the gas to force the air from the charging tube. Tighten nut and open drum valve full. Be sure there are no leaks in charging tube.

Open condenser valve (J) by turning stem in counter-clockwise direction and crack back sufficiently to insure opening to gauge.

Loosen hexagon packing nut on compressor inlet valve (H). Open valve slightly clockwise until 5 lbs. is registered on pressure gauge.

Close valve (H), counter-clockwise as far as it will go. Test for leaks. Turn liquid receiver valve (K) clockwise as far as it will go.

Start the machine, and operate compressor until scales show 2 lbs. of sulphur dioxide have been taken from the drum.

The gas can be transferred more rapidly if drum is heated, which can be done by placing the drum in a bucket of hot water. *Caution*: It is dangerous to attempt to heat drum by a direct application of flame as with a blow torch.

When 2 lbs. of sulphur dioxide have been discharged, close valve on drum, and grasp tube lightly at drum and run hand slowly the full length of the tube to the compressor, the heat of your hand will drive all of the sulphur dioxide out of the tube.

Then close compressor inlet valve (H) against gauge or drum opening by turning stem in counter-clockwise direction as far as it will go. Stop machine.

Remove sulphur dioxide filling tube from valve (H) and attach compound gauge. Crack valve back to secure reading on gauge.

Open liquid receiver valve (K) counter-clockwise until slight pressure is recorded on compound gauge. Then test for leaks.

Turn valve (K) counter-clockwise as far as it will go. Start machine. Test for leaks.

Note: Do not be unduly alarmed if discharge pressure increases at the start to approximately 80 or 90 lbs. This is caused by the removal of the first heat from the cooling unit and box, and it will decrease as the unit cools.

After machine has operated for a 24-hour period, adjust expansion valve if necessary. Then open valves (H) and (J) by turning stems counter-clockwise as far as they will go. Tighten all hexagon packing nuts, remove gauges and replace plugs (U) and (T).

To Evacuate Compressor Only

Loosen hexagon packing nut on valve (H), and make sure stem or valve (H) is seated against plug opening (T) by turning stem in a counter-clockwise direction as far as it will go.

Remove plug (T) and insert compound gauge. Close valve (H) against opening to copper tubing or suction line by turning stem in a clockwise direction as far as it will go.

Start machine. If machine starts to pump oil, which would be indicated by a compressor knock, stop machine for a few minutes to let oil settle.

Start and stop machine at intervals until a 28-in. vacuum is recorded on the compound gauge.

Loosen hexagon packing nut on valve (J), and close valve (J) against opening to condenser cooling coils by turning stem in a clockwise direction as far as it will go.

To Put Compressor Back Into Service

Attach a short copper tube to plug opening in valve (J). One end of the tube should be placed in a bottle or can, to catch any oil that may be pumped over at the time of evacuating compressor.

Start machine and operate same on and off at short intervals until 28-in. vacuum has been obtained in compressor, being careful not to pump over oil.

Remove the tube from valve (J) and replace plug (U). Loosen hexagon packing nut on valve (H) and close against gauge opening by turning stem in counter-clockwise direction as far as it will go.

Remove compound gauge. Replace plug (T) in valve (H). Open valve (J) by turning stem in a counter-clockwise direction as far as it will go.

Machine is now ready for operation.

Sulphur Dioxide Leaks

Close liquid receiver valve (K) and compressor inlet valve (J) to confine the high pressure gas in the liquid receiver and condenser coils. Locate the leak by means of the ammonia test on exposed valves, tubing, and castings.

To determine if there are leaks in the expansion coils inside cooling solution tank, take a strip of blue litmus paper and insert it in the alcohol and water solution. If sulphur dioxide is leaking out of the coils into the solution, its presence will be indicated by a change in the color of the paper from blue to pink.

If leak is on the high side between valves (K) and (J), evacuate the machine immediately either out of doors or in lye water.

If leak is in tubing or expansion coils the closing of valves (K) and (H) will prevent additional high pressure gas from escaping.

Do not attempt to pump the gas into the condenser coils and liquid receiver, as the leak may permit moisture to be drawn into the system if a vacuum is drawn.

As it is very difficult to determine just how much sulphur dioxide has escaped, it is advisable to completely evacuate the machine and recharge it.

Adjustment of Expansion Valve

Any change in the expansion valve setting should be made after the cooling unit has been chilled.

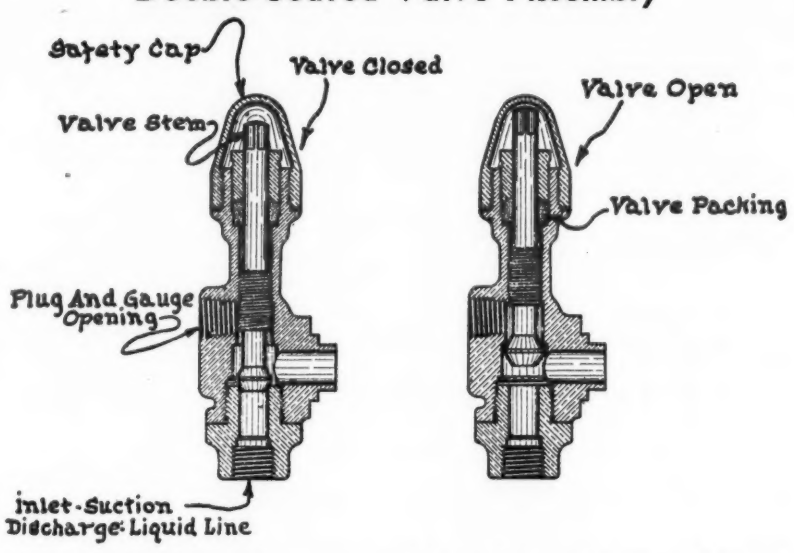
To adjust expansion valve proceed as follows:

Insert pressure gauge in gauge opening in condenser inlet valve (J in Fig. 1). Open this valve by turning it counter-clockwise as far as it will go, and then give it a three-quarter turn clockwise so that it will be open to both condenser and pressure gauge. Condenser inlet valve (H) should be open (turned counter-clockwise as far as it will go).

Remove plug (T) from condenser inlet valve (H) and insert compound gauge. Turn valve stem counter-clockwise as far as it will go and then give it about a three-quarter turn clockwise so it will be open to both gauge and compressor. The compound gauge should register the proper operating pressures as given in the table of compressor specifications on this page.

To lower the vacuum, turn the adjusting screw counter-clockwise. To decrease the vacuum, turn clockwise. In making adjustments, turn the adjusting screw one-quarter to one-half turn at a time.

Double-Seated Valve Assembly



In adjusting these valves, care must be taken to release packing nut so as not to tear packing, see "operating instructions" on page 16.

Wayne Compressor Specifications

	C-1	F-1	C-2	C-3	A-1	A-2 Standard	A-2 Heavy Duty
Compressor model No.							
Motor size (hp.)	⅛	⅛	¼	⅓	⅛	¼	⅓
Motor speed (r.p.m.)	1750	1750	1750	1750	1750	1750	1750
Size fuse (amps.)	6	6	6	6	6	6	6
Average hourly consumption (watts)	220	240	220	420	240	300	420
Compressor speed (r.p.m.)	410	385	360	360	360	360	360
Equivalent of melting ice per day (lbs.)	80.8	114	114	290	118	145	200
Operating vacuum (in.)	8	4 to 8	4 to 6	0 to 2	6 to 8	3 to 4	2 to 4
Weight—net (lbs.)	95	110	109	150	96	120	135
Charge: SO_2 (lbs.)	2	2½	3½	5	2	4	5
Charge: Oil (pts.)	1	1¾	1½	4	1	1½	1½

The following specifications are common to all of the above compressors:
Average freezing time: 4½ hours.
Average running time in 24 hours: 10 to 12 hours.
Average cabinet temperature: 38 to 44° F.

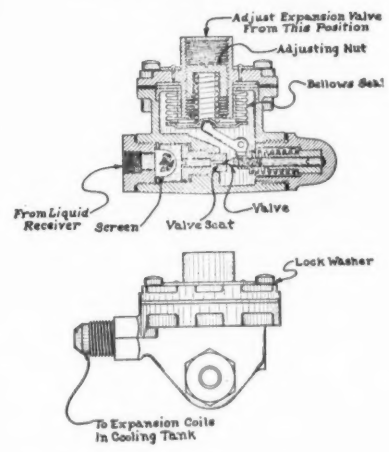
Cleaning Expansion Valve

The expansion valve may sometimes become clogged with dirt which will interfere with its proper operation. Flushing the expansion valve will very frequently remove the dirt and relieve the trouble without the necessity of removing the valve.

While machine is running, unscrew and remove adjusting screw and spring. Press on sylphon button with a blunt instrument; by pressing several times any dirt will probably be dislodged. If this does not accomplish the desired result, remove the expansion valve and overhaul it.

To remove the expansion valve it is necessary to confine the sulphur dioxide in the condenser and liquid receiver as directed above in section "Confining Sulphur Dioxide in Condenser and Liquid Receiver."

Expansion Valve



Section of the automatic expansion valve used by Wayne.

Compressor Lubrication

When oil is lost through leaks or pumped over when drawing a vacuum on the compressor, new oil can be added as follows:

Evacuate compressor as directed above. Remove oil plug in crankcase. Fill crankcase to oil plug opening level with ice machine oil.

Replace oil plug. Use litherage and glycerine on plug and make sure it is screwed in tight. Failure to do so will let moisture in and make oil useless. See table of specifications above for charge of oil required in various compressors.

Repairs on Tank of Cooling Unit

Confine the sulphur dioxide in the condenser and liquid receiver as explained above, and remove the cooling unit from the cabinet.

After the repairs have been completed and the cooling unit replaced, it is necessary to completely evacuate the air from the expansion coils and tubing.

Adjusting Belt

The tension of the driving belt should be adjusted so that motor and machine will operate at correct speed. Avoid too much tension. The belt should be loose enough to depress it about ¾ in. by lightly pressing it.

Motor and compressor should be adjusted on the base so that the belt runs true on the flywheel and pulley, and in proper alignment.

To Relap Sylphon Seal

Relap bearing surface on soft Arkansas oil stone, moving seal with figure eight movement, bearing down very lightly. Use a good quality oil on stone at frequent intervals and clean stone every few moments with gasoline to remove all metal from the pores of the stone.

On type A units relap sylphon seal plate on lapping block with Clover A-1 grinding and lapping compound, with figure eight movement.

Diagnosis and Remedies

Motor Blows Fuses

An overload as well as internal trouble in the motor will cause the fuses to blow. To check the motor independent of the compression it should be removed from the unit.

For 110-volt current use 6-ampere fuse. For 220-volt current use 3-ampere fuse. In no case should the size of the fuse be increased.

Motor Overheats

When a motor becomes overheated, the fuses should be examined. If the amperage of the fuses is correct, the motor will not become hot enough to cause damage, as the fuse will blow first.

This condition may be caused by an overload on the motor, due to friction, or to internal trouble in the motor.

Low voltage is also frequently the cause of a motor overheating, and may cause it to burn out if not properly fused. This trouble is most common in rural districts, at the ends of lines and on currents of low frequency where heavy loads are imposed.

When a motor runs hot, the first thing to do is to check the oil supply in the motor oil wells. If they are dry the motor may have been damaged. If the oil wells contain sufficient oil and the motor has been oiling properly, remove the motor, and check further trouble in the motor itself.

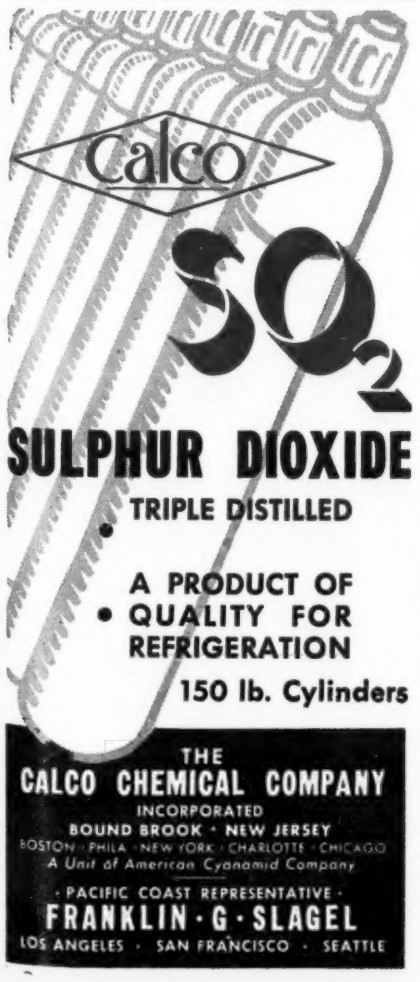
If the compressor turns very hard, the stiffness may be due to corrosion on the compressor parts, causing them to bind and possibly stick tight.

Excessive Operation

This condition is often caused by operating with a too low cooling unit temperature. This motor may be pulling an overload. (This may be checked by the use of a watt meter.)

The overload may be due to friction in the compressor itself, or may be due to some fault in the motor. This can be determined by removing the

(Concluded on Page 18, Column 1)



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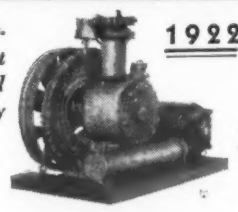

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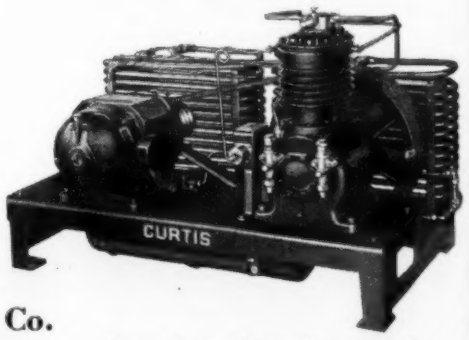

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Remedies for Wayne Service Problems

(Concluded from Page 17, Column 5)

motor and making a thorough check. Excessive operation may be due to a combination of the above reasons, and it is only by a process of elimination that the cause of the trouble can be found.

Ice Cubes Do Not Freeze

Slow freezing may be caused by the cooling unit not having the proper temperature. This should be checked and the thermostat adjusted accordingly. It may be caused by an inefficient expansion valve or dirt under discharge or piston valves, check valves. Upon first starting machine and after defrosting, ice may freeze rather slowly.

Machine Runs Continuously

Thermostat faulty or out of adjustment; not sufficient sulphur dioxide in system; compressor discharge or piston inlet valves leaky; expansion valve out of adjustment or holding open electrical connections grounded or shorted.

Motor Will Not Run

Fuses may be blown. Examine the fuses on the unit as well as the main line fuses. Also look for loose electrical connections or broken line.

Examine the thermostat. The thermostat may be stuck or the points may be loose and not making proper contact. There may be a leak in the bellows which would prevent the proper operation of the thermostat.

The motor brushes may not be making contact, or the motor may be stuck by some foreign object. In the latter case the motor will make a humming noise.

Compressor Sticking

The introduction of air or moisture into the system will, through corrosive action, cause the compressor to stick. Correct leak.

Discharge all sulphur dioxide from system.

Disassemble compressor, repair, clean, and reassemble.

Thoroughly dry out whole system.

Recharge and put into service.

Compressor Knocking

When compressor first starts a slight knock may be apparent. This is due to the agitation of the oil and will gradually pass off.

Other causes for knocking are:

Sticking discharge valve.

End play in motor.

Bad lap in belt.

Loose flywheel.

Loose bearings.

Machine Rattles or Chatters

If machine should rattle or chatter look for the following:

Unit not sitting level on all four legs.

Tubing not properly fastened to wall.

Condensing tubing loose.

Expansion valve out of adjustment.

Motor brush or brush holder loose.

Worn motor bearing.

Loose motor pulley.

Machine Running Hot

High pressure on low side of the system, stiffness of new machine, air in system may cause machine to run hot. Put on the gauges and if the pressure is too great on the low side, it may be corrected by adjusting the expansion valve.

If air has gotten into the system, the indicator on the pressure gauge will show excessive pressure. The high pressure should show 65 lbs. at 70° F. room temperature. If air has been taken into the system, remove it as instructed below.

If the room in which the machine is located is unusually warm, it may cause it to run hot. In this event, see if a better circulation of air can be provided by opening a door or window.

Excessively High Pressure

Excessively high pressure is indicated by compressor pounding, motor overheats or fuses blowing.

It is caused by presence of air in the system due either to not having completely evacuated machine when placing in service or a leak in the low pressure side.

To correct: Make sure condenser inlet valve (J) is turned counter-clockwise as far as it will go. Remove plug (U) and insert pressure gauge.

With machine running, turn condenser inlet valve (J) clockwise until reading in gauge is secured. Reading should be approximately 65 lbs. at 70°.

To remove air:

Stop machine. Close condenser inlet valve (J) counter-clockwise as far as it will go. Remove gauge.

Let machine stand idle for 10 minutes to permit air to accumulate in top of condenser. Turn condenser valve (J) clockwise very slightly to allow air to blow off until slight sulphur dioxide vapor appears.

Close condenser valve (J) counter-clockwise as far as it will go. Attach pressure gauge. Open valve (J) clockwise to get reading on gauge.

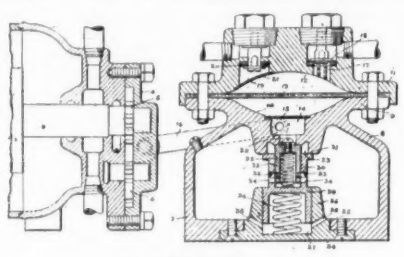
Allow machine to run for 5 or 10 minutes and if pressure is above normal close valve (J). Remove gauge and repeat operation. After removing air, turn valve (J) counter-clockwise as far as it will go. Remove gauge and insert plug.

PATENTS

Issued June 26, 1934

1,963,993. PUMP FOR REFRIGERATING DEVICES. Henry Hendriks, William A. Dean, and Thomas W. Campbell, Toronto, Ontario, Canada, assignors to William A. Dean, trustee, Toronto, Ontario, Canada. Application Dec. 29, 1932. Serial No. 649,270. 9 Claims. (Cl. 230—49.)

1. In a refrigerating device, a chamber adapted to have one side thereof connected with a refrigerating system, a



1,963,993

diaphragm dividing the aforesaid side of said chamber from the other side, means for directing a flow of fluid under pressure constantly to said diaphragm chamber to operate the diaphragm in one direction, and means forming a by-pass for the forced fluid flow to automatically release the pressure of said pressure fluid against said diaphragm to permit its return.

1,964,235. BEER COIL CLEANER. George H. Watson, Los Angeles, Calif., assignor of one-half to Isidore Schwartz and one-half to Sarah L. Schwartz, both of Los Angeles, Calif. Application Jan. 22, 1934. Serial No. 707,667. 7 Claims. (Cl. 225—12.)

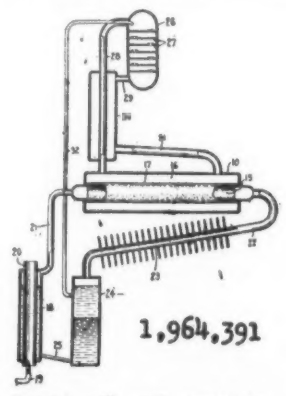
1. A beer coil cleaner, comprising a container, a water supply pipe connected to the lower portion of said container, a valve for controlling the flow of water from said supply pipe into and through said container, a stem secured to said valve and extending upwardly through said container, a bushing in the upper portion of said container, which bushing is adapted to receive a conventional form of fitting used for drawing beer from kegs and like containers and a head on the upper end of said valve stem, which head occupies said bushing and is adapted to be engaged by the conventional fitting when the latter is inserted in said bushing.

1,964,276. CAN COOLING APPARATUS. Bronson C. Skinner, Dunedin, Fla., assignor to Food Machinery Corp., San Jose, Calif., a corporation of Delaware. Application Oct. 7, 1933. Serial No. 692,594. 8 Claims. (Cl. 62—104.)

1. A can cooling apparatus comprising a tank for containing a cooling liquid, a conveyer for conveying cans through the tank beneath the surface of the liquid, means for delivering cooling liquid to said tank, a pair of baffles disposed in spaced relation and extending across the width of the upper portion of the tank between the point of entry of the cans into the cooling liquid and the point of delivery of said cooling liquid to said tank, the lower portions of said baffles extending below the liquid level to retard circulation of the surface stratum of said cooling liquid, a liquid outlet adjacent an end of each baffle through which moving surface liquid obstructed by said baffles may overflow from the tank, and means for receiving the overflow from the baffle nearest the discharge end of the tank and forcing the same back into the lower portion of the tank at a point in advance of said last mentioned baffle.

1,964,391. REFRIGERATING SYSTEM. Albert R. Thomas, New York, N. Y., assignor to Electrolux Servel Corp., New York, N. Y., a corporation of Delaware. Application Sept. 18, 1931. Serial No. 563,587. 11 Claims. (Cl. 62—119.5.)

4. A refrigerating apparatus comprising a cell divided by a porous partition impregnated with oil, a circuit including one



1,964,391

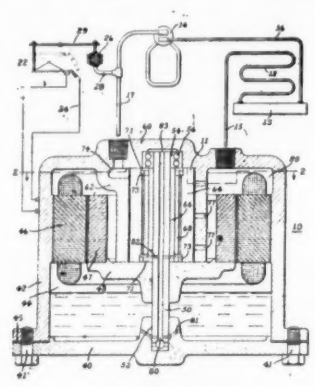
part of said cell and containing hydrogen, means for evaporating butane in said hydrogen circuit, and means for circulating water vapor through the other part of said cell.

1,964,414. THERMOSTATIC VALVE. Edward J. Levy (now by judicial change of name Edward Levy Mayo), Cleveland, Ohio, assignor to The Bishop & Babcock Mfg. Co., Cleveland, Ohio, a corporation of Ohio. Application Aug. 26, 1929. Serial No. 388,308. 19 Claims. (Cl. 236—34.)

1. In a thermo-responsive valve device for controlling the flow of fluid in a conduit, a tubular valve seat element through which the fluid is directed to flow, a supporting flange on the tubular element, adapted to be sealedly mounted in the joint between two mating elements of the fluid conduit, a valve element mounted to oscillate on an axis transversely of the tubular element to open and close the passage way therethrough, a plurality of diaphragm supporting elements each secured at one end to said flange and extending therefrom in the general direction of the tube axis and secured at their other ends to a diaphragm carrier, a dished-disk bi-metallic diaphragm on the carrier and an axially disposed connecting rod secured at one end to said diaphragm and at the other end pivoted to said valve.

1,964,415. MOTOR-COMPRESSOR UNIT. Harry R. Van Deventer, New York, N. Y., assignor to Frigidaire Corp., Dayton, Ohio, a corporation of Delaware. Application July 31, 1930. Serial No. 471,946. 4 Claims. (Cl. 230—139.)

3. An electric motor rotary compressor unit comprising a sealed casing having a cylindrical extension thereof forming a



1,964,415

wall of the compressor, a rotary plate carrying the rotary parts of the compressor telescopically engaging said cylindrical extension, a motor stator carried by said casing, a motor rotor carried by said plate, said cylindrical extension, rotary parts, motor stator and motor rotor being positioned to be of substantially the same axial extent.

1,964,431. FREEZING TRAY. Harvey D. Geyer, Dayton, Ohio, assignor, by mesne assignments, to General Motors Corp., Detroit, Mich., a corporation of Delaware. Application Nov. 25, 1931. Serial No. 577,251. 4 Claims. (Cl. 62—108.5.)

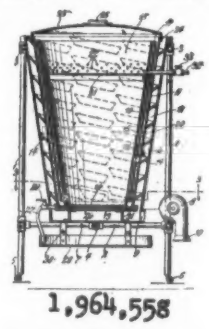
1. A freezing tray comprising: a one piece flexible non-metallic container having ice-block compartments therein and having an outwardly projecting marginal flange around its upper edge, and a bottomless carrier frame therefor comprising a flat metal band surrounding and fitting snugly upon the outer side walls of said flexible container to form a support therefor, said metal band having its upper edge permanently secured to said marginal flange by mechanical means after said non-metallic container is completely formed.

1,964,476. FREEZING TRAY. Delbert F. Newman, Schenectady, N. Y., assignor to General Electric Co., a corporation of New York. Application April 13, 1931. Serial No. 529,688. 3 Claims. (Cl. 62—108.5.)

1. A freezing tray comprising a frame having a plurality of openings therein, a support for retaining the frame above the surface on which the same is placed, a plurality of separate cups loosely arranged in the openings in said frame so that they rest on the surface on which said frame is placed independently of each other and said frame, and portions of said cups above and spaced from said frame being arranged to engage said frame to support said cups therein when said frame is removed from the support.

1,964,558. AIR CONDITIONING APPARATUS. Given Campbell, St. Louis, Mo. Application May 16, 1932. Serial No. 611,533. 16 Claims. (Cl. 62—131.)

1. An apparatus of the character described comprising an enclosing wall, a



1,964,558

container surrounded by and spaced from said wall, an enclosure for refrigerant mounted in and spaced from the wall of said container, a wall mounted between said enclosure and said container and spaced from both, and means for forcing air into and through said space between said enclosing wall and said container.

1,964,636. TEMPERATURE CONTROL FOR REFRIGERATING SYSTEMS. Anthony F. Hoesel, Chicago, Ill., assignor to Peerless Ice Machine Co., Chicago, Ill. Application April 1, 1929. Serial No. 351,708. 2 Claims. (Cl. 62—3.)

1. Refrigerating apparatus comprising a plurality of cooling units, a compressor, refrigerant supply and vapor return conduit systems establishing communication between said compressor and said units, a valve for each of said units in said vapor return system having a constantly open passage therein for the flow of vapor from the respective units to said return system, a control device responsive to the pressure of said return system adapted to effect the operation of said compressor upon the building up of a predetermined maximum vapor pressure within said return system and to stop said compressor upon the reduction of the pressure to a predetermined minimum limit, said valve having means responsive to pressures between said maximum and minimum limits tending to open the same to provide for increased flow of vapor from said units into said return system, and manually operable means for regulating the opening of said valves by the respective pressure responsive means.

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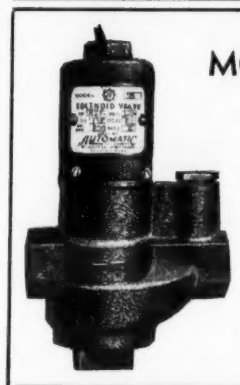

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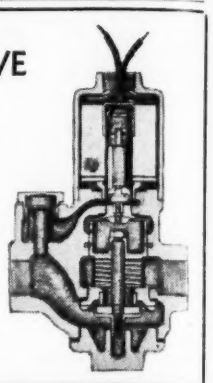

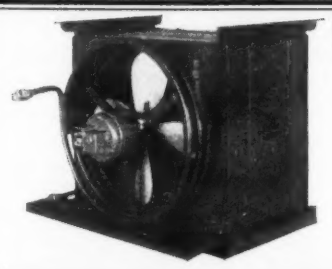

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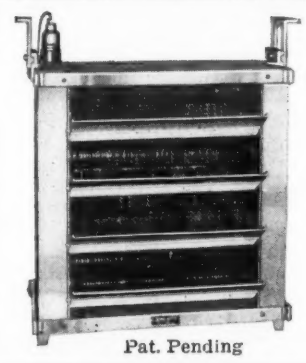

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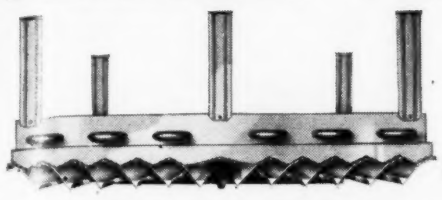

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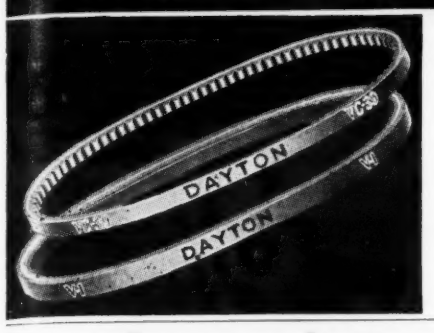

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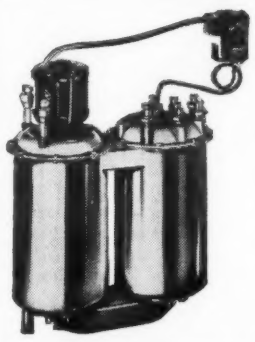

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QUESTIONS

Ice Tray Manufacturers

No. 1724 (Illinois)—Through the courtesy of the Frigidaire Corp. of Dayton, Ohio, your name was sent to me as the logical place to secure a list of ice tray manufacturers. Can you furnish me with the same?"

Answer: See advertisements in this issue.

Air Conditioning Books

No. 1725 (Service Man, Illinois)—"I am working with the Pullman Co. doing service work on air-conditioned railway cars and am looking for a good book on air conditioning. Can you recommend one which will inform me on this subject."

Answer: Suggested books on air conditioning are "Air Conditioning for Comfort" by Samuel R. Lewis, published by Engineering Publications, Inc., 1900 Prairie Ave., Chicago, Ill. (price $3.00) and "Air Conditioning" by Moyer and Fittz, published by McGraw-Hill Book Co., 330 W. 42nd St., New York, N. Y. (price $4.00).

Developments in air conditioning equipment are reported regularly in ELECTRIC REFRIGERATION NEWS.

Replacement Parts

No. 1726 (Manufacturers Representative, Missouri)—"We are contemplating going into the refrigeration parts jobbing business, selling to service men in this territory, and getting out a complete catalog of replacement parts.

"Have you available a directory showing the manufacturers of various parts such as controls, tubing, fittings, evaporators, belts, etc. If you have such a directory kindly quote us your price so we can send you our check to cover. Also advise us of any other information you might have so as to enable us to get started in the refrigeration parts jobbing game."

Answer: Manufacturers of various component refrigeration parts and also concerns making supplies, accessories, and other refrigeration products are listed in the 1934 REFRIGERATION DIRECTORY. Price of the DIRECTORY is $3.00 per copy.

TVA Household Models

No. 1727 (Distributor, New York)—"We understand that a number of refrigerator manufacturers are about to bring out a low-priced refrigerator similar to the General Electric $74.50 model.

"We would appreciate very much your giving us any information you can in this matter."

Answer: (See below).

No. 1728 (Publisher, Illinois)—"Do you have information available which would give the names of the various manufacturers who are producing small size refrigerators to be used in the Tennessee Valley?

"We have photographs of this type of new model from General Electric, Frigidaire, and Kelvinator but would like to include models of other manufacturers who are producing this new small size refrigerator."

Answer: General Electric announced its TVA model in the June 13 issue of ELECTRIC REFRIGERATION NEWS. Frigidaire and Kelvinator have also announced TVA models, the former in the June 20 issue of ELECTRIC REFRIGERATION NEWS and the latter in the June 27 issue. No announcement has been made by other manufacturers to date.

Refrigerated Trucks

No. 1729 (Department of Commerce, Michigan) — "Our Automotive-Aeronautics Trade Division, Washington, is anxious to know if you have compiled any statistics showing the number of refrigerated trucks in the United States."

Answer: We have not compiled statistics showing the number of refrigerated trucks in use in the United States, although we would be very interested in having this data ourselves. A survey among the manufacturers of refrigerated trucks listed in the 1934 REFRIGERATION DIRECTORY might bring out this information.

Majestic Sealed Unit

No. 1730 (Dealer, Kentucky)—"What issue of the NEWS contained information on the old Majestic sealed unit refrigerator?

"We should also like to know the status of the warranty and service department. We have a number of Majestics out under warranty and would like to know of some company specializing in this type of repair work."

Answer: An article on the Majestic sealed unit appeared in the Aug. 16, 1933, issue of ELECTRIC REFRIGERATION NEWS.

For information regarding warranty and service write to LeRoi Williams or Thomas Marshall, receivers for Grigsby-Grunow Co., care of Edmund D. Adcock, referee in bankruptcy, 100 W. Monroe St., Chicago, Ill.

Conversion of Compressor

No. 1731 (Missouri) — "I recently wrote to Popular Mechanics Magazine for certain information on an electric refrigerator unit, and they were kind enough to refer me to you for the information I wish.

"I want to know if you have any information on converting a refrigerator unit from ethyl chloride to sulphur dioxide gas. I recently came into possession of an Iroquois unit, model C-2, and would like to use a less bothersome gas than the ethyl chloride it is built for. I have seen some of these units in operation after a number of years of service and they are doing very good using ethyl chloride but I would like to try and convert the one I have to sulphur dioxide if possible. The few service men I have talked to have not been able to give me any information."

'Hydrolene' Compound

No. 1732 (Manufacturer, Illinois)—"Kindly give us, at the bottom of this sheet, the name and address of the manufacturer of Hydrolene, the sealing compound used in electric refrigerators."

Answer: Sun Oil Co., 1608 Walnut St., Philadelphia, Pa. Other companies making sealing compounds of the same type are Armstrong Cork & Insulation Co., 917 Concord St., Lancaster, Pa., Johns-Manville Sales Corp., 22 E. 40th St., New York City, and Lewis Asphalt Engineering Corp., 30 Church St., New York City.

Manufacturers

No. 1733 (Manufacturer, Pennsylvania)—"Can you give me an up-to-date list of the manufacturers of household electric refrigerators."

Answer: See page 262 of the 1934 REFRIGERATION DIRECTORY for manufacturers of household electric refrigerators. Truscon Steel Co., Electric Refrigeration Division, Cleveland, O., and Fairbanks-Morse Home Appliances, Inc., 430 S. Green St., Chicago, Ill., have brought out household electric refrigerators since the Directory was published.

G-E Monitor Top

No. 1734 (Distributor, Illinois)—"We are trying to locate in one of your issues this year an announcement regarding the discontinuance by the General Electric Co. of their Monitor Top refrigerators. We found in an April issue where they were making this type unit only in New York, but we are under the impression that you stated in your paper that it had actually been discontinued."

Answer: We have not published anything to the effect that General Electric has stopped manufacturing its Monitor Top line.

Specifications of the Monitor Top line were included in the specifications data submitted by General Electric for the May 30 issue of ELECTRIC REFRIGERATION NEWS. For information concerning G-E's new models this year, see the March 21 issue.

Refrigeration Training

No. 1735 (School, Wisconsin)—"I have been referred to you for information in regard to electric refrigeration and air conditioning. At the present time I am teaching in the vocational schools at Wausau and we would like to incorporate in our electrical course the above mentioned.

"If you have any information, suggestions, or material that you think would be of help in this line, I would be glad to receive it."

Answer: Engineering progress in electric refrigeration has been reported regularly in ELECTRIC REFRIGERATION NEWS. Developments in air conditioning are also closely followed in the editorial columns of the NEWS.

Milk-Cooling Aerator

No. 1736 (Exporter and Importer, New York)—"In going over your 1934 REFRIGERATION DIRECTORY, I have been unable to find the name of a manufacturer of a direct-expansion milk-cooling aerator.

"I will appreciate your giving me the name of a manufacturer of this type of aerator."

Answer: Aerators for milk cooling are listed on page 138 of the DIRECTORY, but are not subdivided according to direct-expansion or water-circulating types.

Direct-expansion aerators are made by Cherry-Burrell Corp., 427 W. Randolph St., Chicago, and Gay Engineering Corp., 2650 Santa Fe Ave., Los Angeles, Calif.

Apple Storage

No. 1737 (Illinois)—"Have you a publication which would give information regarding mechanical refrigeration as applied to the storage of apples. If you have any copies that have articles on this we would be glad to receive them."

Answer: The June, 1932, issue of REFRIGERATED FOOD NEWS contained an article on "Temperature Greatest Factor in Apple Storage." This publication was discontinued early this year, but a copy of the issue mentioned may be obtained by addressing Business News Publishing Co., 5229 Cass Ave., Detroit, Mich. Back issues are priced at 10 cents each.

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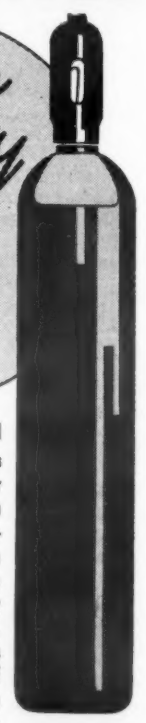
Wells at Kinzie Street, Chicago

ANSUL GIVES



When you buy an Ansul Refrigerant, whether it is SULPHUR DIOXIDE or METHYL CHLORIDE you are certain of receiving a product that will give complete refrigerating satisfaction. To guarantee this, every cylinder is analyzed before shipment. You pay no premium for this service. It is but a part of Ansul's customary service to provide their customers with the best at all times.

ANSUL CHEMICAL CO.
MARINETTE - WISCONSIN

The RANCO THERMOSTAT for 1934

not only guards the refrigeration system when DEFROSTING; it also guards it when FAST FREEZING. When the dessert in the evaporator is frozen, the thermostat switches to a normal cycle, thus stopping the continuous refrigeration which if maintained would over-chill the food cabinet.

THE AUTOMATIC RECLOSING CIRCUIT BREAKER COMPANY
1300-10 Indianola Avenue, Columbus, Ohio